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THE BRICKBVILDER AN ARCHITECTVRAL MONTHLY

VOL. 21

MAY
1912

NO. 5

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THE BRICKBUILDER

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NOTICE.—The regular mailing date for **THE BRICKBUILDER** is the 25th of the month; for instance, the January number was mailed January 25th. The Post Office Department now sends the larger part of the editions of all publications by freight, and this requires an additional time for transportation of from two to eight days, depending upon the distance of the distribution point from the publication city. The publication date of **THE BRICKBUILDER** will be moved forward gradually so that copies for a given month will reach subscribers even at distant points within that month.

CHURCH OF SAN FRANCISCO, ACATEPEC, MEXICO.

The façade of this church is probably the most elaborate in Mexico, showing the free use of tile for decorative purposes. The dark tile shown in the illustration are rough red without glaze. The lighter tile are of various colors, usually blue with white ornament; the others, solid green, orange, and blue.

THE COMPLETE ANGLER OR COMPETITIONS ANCIENT AND MODERN

BY HUBERT G. RIPLEY.

V.

IT would be impossible to exhaust the subject of the historical aspect of competitions without going to quite undue lengths; enough and surely more than enough has been indicated to show their general trend. In order to make our position quite clear, we have been forced to go somewhat into detail, as the foibles and idiosyncrasies of any people, class, sect, race, vocation, occupation, profession, trade, or calling, are, to the keen observer, a nidana of their true inwardness. In order to properly diagnose the case, a study of the symptoms is in order.

Thomas de Quincy says, "If a man once indulges himself in murder he may soon come to think little of robbery, and from robbery he comes next to drinking and Sabbath-breaking, and that is but one step from incivility and procrastination. Once begin upon the downward path, you never know where you will stop. Many a man has dated his ruin from some murder or other that perhaps he thought little of at the time."

In some such way as this, the enthusiastic young architect begins his career. He looks with envy at the list of those invited to compete for the new Town Hall or the Memorial Library, and longs for the chance

·MARMOR EXPECTAT·

to spread his wings and soar. Eventually he succeeds in getting on the list (way down next to the last, to be sure) of some minor competition, and day and night are as one to him. He starts in by making thumbnail sketches of his "partie" on the margin of his newspaper coming into the office on the train in the morning, he postpones writing the plumbing specifications for the alterations to Bill Jones's barn (his only job), the full size detail be discarded by process of elimination until tired and exhausted, and utterly dissatisfied, the work is laid aside for a short space. When it is taken up again and looked at with a fresh eye, it seems even worse than it did when first made. This does not dampen his ardor in the least, work is resumed ventre-à-terre, until plan and elevations are in syzygy, and finally, as the time draws near for rendering, a scheme is decided upon and the final tracings started.

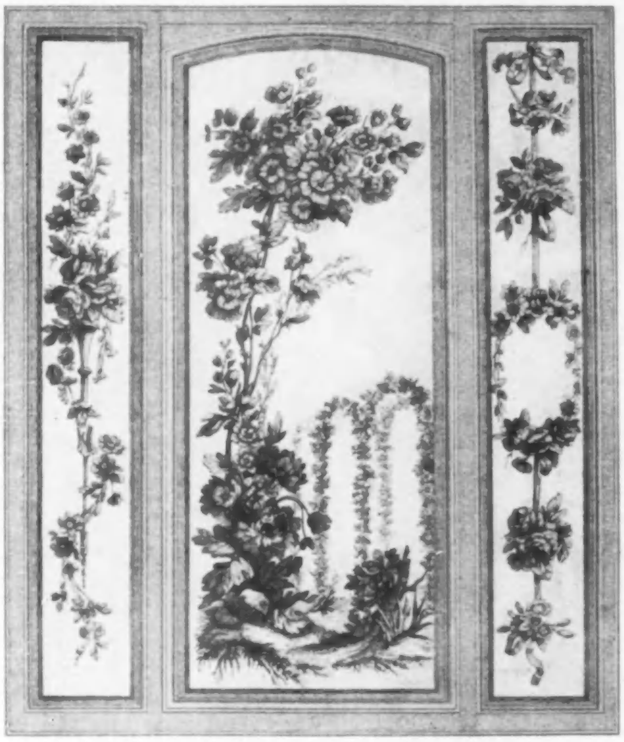


FIG. XVI. FLOWER PANEL BY PIERRE RANSON.

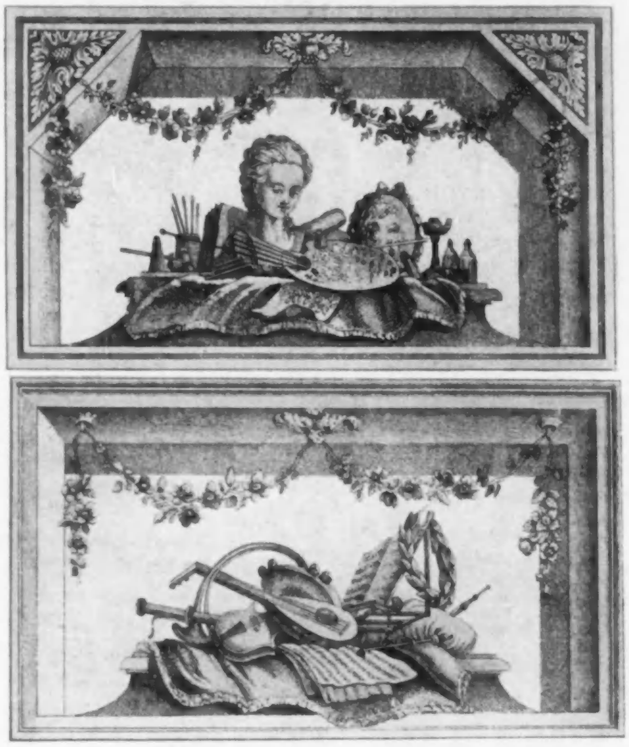


FIG. XVII. DESSUS DE PORTES BY PIERRE RANSON.

for the skylight lays neglected and unfinished on the drawing board, and everything is pushed one side to work on this his first real opportunity. What a boon to the manufacturers of tracing paper, competitions are. Nowadays a competition without tracing paper would be most incongruous to say the least, as tons of this material are used annually in the large and small architect shops. Tracing paper has even been officially recognized by staid juries and often drawings are asked for, rendered on this medium in pencil, "with the shadows cast lightly in monotone and the walls blocked in solid on the plans."

The enthusiastic young architect makes "calque" after "calque," and then he makes a lot of tracings. Idea follows idea in rapid succession only to

FIG. XVIII. TROPHÉES BY JEAN-CHARLES DE LA FOSSE.

This is a very critical time and everything depends upon intensive analysis and searching selection. Now is the period for reference to books. Perhaps, more properly, it should be said there are two periods for reference to books in the process of making competition drawings. At the beginning when work is started it is well to look carefully over all the back numbers of THE BRICKBUILDER for reference to buildings of a similar character, and also to consult other standard works such as D'Espouy's Fragments d'Architecture Antique, Fragments d'Architecture de la Moyenne age et de la Renaissance; Gailhabaud, Monuments Anciens et Moderne; Haupt's Bologna, Pavia, Mailand, Turin, etc.; Cesar Daly, Rouyer, Letaroui-

elly, Sauvageot, Bosc, Viollet-le-Duc, Verdier et Cattois, etc., etc.

After the "partie" is decided upon and the general style and dimensions fixed, consult such works as Architecture Decoration et Ameublement, Epoque Louis XVI, M. Rudolphe Pfnor; De Neufforge, Blondel, Iconologie Historique par Delafosse; Percier et Fontaine's various works; R. and J. Adam; Meyer's Handbook of Ornament; the Architectural Association sketch books, etc., for suggestions and ideas as to detail. A well-drawn, carefully studied and charmingly detailed plan and elevation has pulled many a loser out of the fire, especially if the ornament is drawn with sure precision and painstaking accuracy. Such a set of drawings is not only a delight to the eye but, when skilfully presented, favorably prejudices the most astute jury.

Of course all this means, taken in the aggregate, an immense and incalculable amount of labor and effort, ninety or ninety-five per cent of which is without material recompense or practical result as far as immediate financial rewards are concerned, or visual evidences of actual construction are displayed; and this is the reason why so much is said in favor of the abolition of competitions. Does any one suppose for a minute that there would be any howl against competitions if every body was given a capital prize? But how about the excellent schooling and the splendid training in the solution of actual live problems that the serious study of competitions gives? That is surely worth while, and we know from the experiences of the past that in no other way could architecture have reached its present development. When we enter upon a competition and put our best effort and study into it, we are simply paying back the debt we owe to the past and keeping alive the highest traditions of our profession.

All architects at the beginning of their career realize this even if later on they fall away from some of their high ideals. It is but natural that they should; contact with the world is not always gentle and the knocks and whangs, as the years roll on, are apt to leave their cicatrices and their susurri of gall. "The bee and the spider suck honey and poison out of the same flower."

Perhaps from the very nature of things impalpable, the profession of architecture is freer from this rancor than any other calling. The architect is naturally of the most

FIG. XIX.
COMPOSITION PITTORESQUE BY JEAN-CHARLES DE LA FOSSE.

FIG. XX.
DECORATIVE FIGURES BY CHEVALIER GIOCONDO ALBERTOLLI.

FIG. XXI.
GRILLE BY CAILLOUET.

FIG. XXII.
CLOCK BY AUBERT PARENT.

FIG. XXIII.
VASE BY CHEVALIER EDMOND PETITOT.

FIG. XXIV. BRAS DE CHEMINÉE BY JEAN FRANCOIS FORTY.

confiding and trusting disposition. He is a simple soul believing good of everybody and seeing only the ideal, and this is as it should be and we are all glad of it.

What to do with our unsuccessful competition drawings after they are returned with a polite note of thanks is worthy of some consideration. If they are mounted on cardboard, as oftentimes they are, it is well to preserve them carefully as these cardboards come in very handy from time to time to mount other sketches on, or to make mats for framing some favorite drawing for exhibition purposes. If the drawings are good ones and well worth while, as they oftener than not are, they should be given the widest publication in the professional press. Our confreres, the French, know what to do with their unsuccessful concours. They publish them, and give them the widest circulation. There are very many beautiful volumes and portfolios of plates of all sorts and kinds of buildings that have never been built and never will be built, and they are among the most valuable works an architect can have in his working library. Some of these books contain so many beautiful plates that it makes an ordinary man gasp for breath and choke with emotion, as he reverently turns over their glittering and scintillating pages, and wonders if ever he will attain to one tenth part of the proficiency here so prodigally displayed. It is true we have not anywhere near the ability as a body that the old Greek architects, for example, had, and our work would make but a poor showing stacked up against the conceptions of Jetinus and Carpion and Ctesiphon, even if we placed our best beside the least of their efforts; but when our most skilful and talented architects and draftsmen strive for weeks and months on a problem and then turn out something that is really fine and noble and beautiful, and the jury or professional adviser, with the most sincere and dispassionate judgment, turns it down, it is a shame to let all that effort be lost, and never see the light of day in enduring material.

Think what glorious dream cities could be built from a judicious selection from the unsuccessful competition drawings of the last twenty-five or thirty years even, to go back no farther! What splendid boulevards, parks, capitols, city-halls, libraries, colleges, schools, museums, dwellings, and a host of minor buildings would go towards the making of such a city as never was. And every building in that city would be a perfect gem, complete, harmonious, beautiful. Long streets of the most interesting and fascinating façades, noble vistas with just the right thing to look at on the axis, quaint picturesque bits unexpectedly happening on the view, beautiful gardens with all the environment and furnishings that would make them elysian; in fact such an ideal place would certainly put it all over any modern city, and even give Rome, in the height

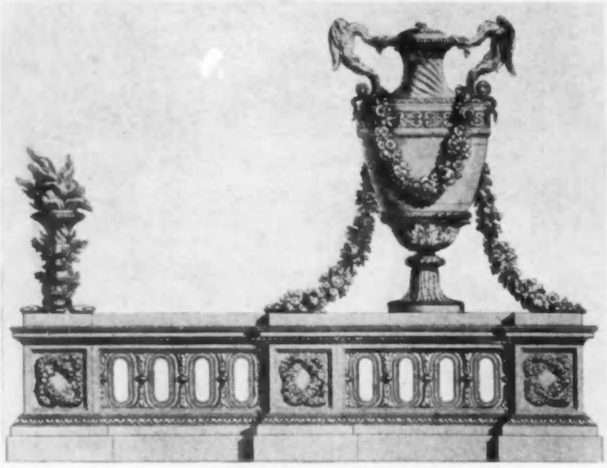


FIG. XXV. CHENET BY JEAN FRANCOIS FORTY.

of its glory, a run for first money. All that one would have to do to realize this is to look at Buhlman's panorama of Ancient Rome, which gives a faint conception of how a modern city composed as per above would look.

Think, too, how happy all the poor old chaps who got second and third and fourth places would be. Of course some of the designs that look so fine on paper might turn out punk, but then, some of the winners aren't so wonderful even now as it is. Still, on the whole, we feel that the experiment would be well worth trying, if the scheme were properly financed and a little put aside each year as a sinking fund. What it really all comes down to is this: The value of competitions is not to be measured by the success or non-success of the drawings rendered. And their value, won or lost, cannot be overestimated.

FIG. XXVI. TEMPLE OF JUNO MONETA FROM BÜHLMANN AND WAGNERS RUNDGEMÄLDE OF ANCIENT ROME.

Specifications for a Heating and Ventilating System for an Eight Room School Building.

CHARLES L. HUBBARD.

THE following simple specifications are for a heating and ventilating system, the design of which was given in the preceding article. They may be enlarged upon in any way the architect deems advisable, and, by suitable changes, be made to answer for quite a variety of buildings of this general type.

General Conditions. The term "Owners," as used in the following specifications, refers to the first party to the contract under which these specifications shall be executed.

The term "Contractor," as used in the following specifications, refers to the second party to the contract under which these specifications shall be executed.

The words "approved," "satisfactory," and others of similar meaning used in these specifications, shall be understood to have reference to the judgment of the architect regarding the material or work alluded to.

All materials are to be new and of the best class in every respect, and the most approved of their respective kinds.

No departure from plans and specifications shall be made without a written order therefor from the Architect.

In case any change is made involving the use of material, apparatus or labor costing less than that specified or shown, the owners shall receive the benefit of the difference in cost, and if such changes cost the Contractor more than the corresponding material or labor called for or shown, the owners shall pay to the Contractor the difference in costs, plus a commission not exceeding twenty per cent (20%) on the cost difference.

The Contractor is to guarantee all labor and material for one year from the acceptance of his work, and is to put and keep the same in repair, unless such defects as may develop are clearly the result of faulty usage of the apparatus by employees not under his control.

The right is reserved to prepare detail drawings for all parts of the work. The drawings are made a part of these specifications, and all writing thereon is to be followed in the same manner as though herein specified.

Where sizes are not plainly marked on plans, the sizes marked for the corresponding parts are to be followed, or the architects will determine the sizes when entirely omitted.

The intent of these specifications is to cover and include all material and labor required to install the entire apparatus in all of its several parts, so that, when finished, it shall be complete as a whole, and perfect in all its details, both in construction and in operation. Any minor items in the matter of material to be furnished, or of work to be done, or minor changes to be made in order to complete the apparatus and to equip it for its intended use, though such details are not specially noted in the specifications nor shown on the plans, are to be furnished by the Contractor without extra charge.

Upon the completion of the work the Contractor shall furnish a competent man to test and adjust the entire apparatus under the direction of the architect, to the entire satisfaction of the latter.

BOILERS.

Type and General Dimensions. The boilers two (2) in number, are to be of the horizontal tubular type with full overhanging fronts, and all parts and pieces must be designed accordingly. The shells are to be thirteen feet four inches (13′ 4″) long outside, and forty-eight inches (48″) in diameter. The heads are to be twelve feet (12′ 0″) apart outside. The size and description of the other parts are to conform substantially to the details usually furnished by the Hartford Steam Boiler Inspection and Insurance Company for boilers of this size.

Materials: Quality and Thickness. Shell plates are to be three-eighths of an inch (⅜″) in thickness of Open Hearth Fire Box Steel, having a tensile strength of not less than fifty-five thousand (55,000) pounds, nor more than sixty thousand (60,000) pounds per square inch of section. Heads are to be one-half inch (½″) in thickness of best Open Hearth Flange Steel.

Riveting. Longitudinal seams are to be of the standard double riveted, butt-joint type, with rivets staggered. They must be arranged to come well above the fire line of the boiler, and must break joints in different courses in the usual manner.

The transverse seams are to be single riveted, with rivets of the same diameter.

The rivet holes must be drilled, and must be neatly chamfered one thirty-second of an inch (1/32″) on the faying side of all plates.

Braces. Each boiler is to have eight (8) solid steel diagonal braces on each head, each brace having a sectional area of not less than one square inch in its weakest part. They are to be riveted to the heads and shell with rivets of a strength equal to the body of the brace.

Tubes. Each boiler is to have forty-four (44) best lap welded tubes three inches (3″) in diameter and twelve feet (12′ 0″) long, set in vertical and horizontal rows with a clear space between them vertically and horizontally of one inch (1″), except the central vertical space which is to be two inches (2″).

Manhole. Each boiler is to have one manhole eleven by fifteen inches (11″ x 15″) with a strong internal frame and cover. It is to be located in the shell on top of boiler.

Handhole. Each boiler is to have one handhole four by six inches (4″ x 6″) with suitable plate, yoke, and bolt, located in each head below the tubes.

Brackets and Wall Plates. Each boiler is to have four (4) cast iron brackets, two (2) on each side, securely riveted in place, twelve inches (12″) long with a projection of ten inches (10″) from the boiler.

Cast iron wall plates twenty inches (20″) long, ten inches (10″) wide, and one and one-half inches (1½″) thick must be furnished for each bracket to rest upon, and three rollers, each one inch (1″) in diameter and nine inches (9″) long, must be furnished for each of the rear brackets to rest upon, to allow free expansion of the boiler.

Nozzles. Each boiler is to have two (2) cast iron nozzles, one four inches (4″) in diameter for steam pipe connection, and one four inches (4″) in diameter for equalizing pipe and safety valve connection.

Smoke Opening. Each boiler is to have an opening ten by thirty-two inches (10″ x 32″) cut out of front connection on top for the attachment of uptake or bonnet.

Feed Connection. Each boiler is to have a hole tapped to receive a one-inch (1″) feed pipe, ending in an elbow looking down between tubes and shell.

Blow-off. The boilers are each to have a circular plate of the same material as the shell, tapped to receive a two and one-half inch (2½″) blow-off pipe. These pipes are to be extra heavy with extra heavy fittings, and are to be protected in the combustion chamber by cast iron sleeves packed with mineral wool.

Fusible Plug. The boilers are each to be provided with a low-pressure long fusible plug in the back head, with its center two inches (2″) above the top of the upper row of tubes.

Fittings. Furnish and properly connect to each boiler as directed, one steam gauge with eight inch (8″) dial, iron body and nickel-plated rings, graduated for indicating pressures up to a maximum of sixty (60) pounds.

Furnish and connect to each boiler one (1) three and one-half inch (3½″) pop-safety valve of best make, set to blow at a pressure of twenty-five (25) pounds.

Provide suitable chain and pulley attachment for lifting the safety valves and carry the pull chains to some convenient point for use.

Furnish and connect with each boiler one combination box with three-fourths inch (¾″) gauge glass and gauge cocks; using brass pipe outside the bonnet, and iron inside. A three-fourths inch (¾″) brass drip pipe with valve is to be carried to the ash-pit. Set the water gauge at such a line that there shall be two inches (2″) of water over the tops of the tubes when the water disappears from the glass.

Castings, Doors, Grates, Bolts, etc. Each boiler must be provided with a cast iron front; with all necessary anchor bolts; two (2) close fitting furnace doors with liner plates; two (2) close fitting ash-doors; and back connection door.

Grate bars for plain grates, fifty-four inches (54″) long by forty-two inches (42″) wide, with suitable bearer bars for the same.

Arch bars for back connection and all buck staves, with the necessary bolts or tie-rods; and all other castings or iron work of any description necessary for the proper setting of the boilers complete.

General. The size and description of parts are to conform substantially to the details usually furnished for boilers of this description and size, and during the process of construction all the material and workmanship are to be subject to the inspection of, and after erection to be approved by, the architect and by a satisfactory Steam Boiler Inspection and Insurance Company, and the latter's insurance policy for one (1) year for Four Hundred Dollars ($400.00) on each boiler from the completion of setting, is to be furnished by the Contractor to the owners.

Tests. Before leaving the construction shops the boilers shall be tested under a hydrostatic pressure of one hundred and fifty (150) pounds to the square inch, and all joints and all connections made tight at that pressure.

Boiler Foundations and Settings. The settings are to be built substantially as shown on plans. Inside brick are to be light hard; exposed or outside bricks are to be of the best quality hard burnt. Furnace and bridge walls and rear arch are to be lined with A No. 1 fire brick. All red bricks are to be laid in freshly made cement mortar of best quality. Fire bricks are to be laid in either a mixture of fire clay and ground fire brick, or pure cement with very close joints.

The boiler tops are to be covered with one layer of light burnt brick, laid loose on side, care being taken to leave a clear space above rivet heads; and an outer cover similarly laid in cement mortar.

Smoke Connections. Smoke connections are to be of No. 12 American Gauge black iron of sizes indicated, and are to run as shown on basement plans. Cleanout doors are to be provided as indicated or directed.

In each uptake or bonnet a damper for hand regulation is to be placed and suitable means for adjusting and securing it in any desired position are to be provided.

Furnish and place in main pipe a balanced damper of No. 10 iron, closing at forty-five degrees (45°). This damper is to be connected with a damper regulator to be described later.

Feed Pipe. The feed pipe to boilers shall be of heavy brass and fittings one inch (1″) in diameter. Each branch to be furnished with a check-valve and a gate-valve. A one-inch (1″) connection shall be made with the feed pipe for supplying water direct from the mains.

Fire Tools. Furnish two complete sets of heavy fire tools, including tube cleaners, also two large size steel scoop shovels, and furnish a suitable rack for holding the above tools when not in use.

Furnish one (1) set of three (3) brass oil cans and tray, and two (2) ten (10) gallon tanks, labeled to indicate contents, and provided with suitable draw faucets and brass trays.

Furnish a hardwood stand properly designed to accommodate the oil tanks and having a shelf between the floor and top of stand to hold tray.

Provide also one coal barrow of three hundred (300) pounds capacity.

Blow-off Tank. Furnish, place and connect in a proper and complete manner a cast iron blow-off tank, twenty-four inches (24″) in diameter, and forty-eight inches (48″) deep.

Waste Pipe. The waste pipe from the blow-off tank is to be two and one-half inches (2½″) in diameter of XX heavy pipe. It is to connect with the main drain outside of the building.

Exhaust Pipe. This pipe is to be carried to the roof and about six inches (6″) above the top of the flue through which it is run. It is to drip through a siphon trap to the blow-off tank.

Damper Regulator. Furnish and properly connect to steam drum and to balanced damper a hydraulic damper regulator of latest pattern, locating the regulator within the boiler room at such point as the Architect shall direct.

Engine. Furnish, set and connect one belt-connected fifteen by eight inch (15″ x 8″) low pressure horizontal engine.

Furnish and connect a sight-feed lubricator of one pint capacity, and all necessary or usual oil cups, valves, and attachments for steam, exhaust, and drips. All drips are

to be connected and carried to the sewer through the drain from the blow-off tank: The engine shall be provided with a throttling governor, set to give a speed of two hundred and fifty (250) revolutions per minute.

Engine Foundation. The Contractor is to cause the engine to be erected and connected substantially as indicated by the engine builder on a solid concrete foundation to be built by the Contractor in conformity to a plan furnished by the makers and approved by the Architect.

Sound Deadener. The engine is to be furnished with a sound-deadening layer, to consist of two inches (2″) of hair felt placed between an upper and lower sheet of lead, the whole to be brought down hard with screw bolts. The lead sheets are to be made sufficiently large to allow the edges of the lower sheet to be turned up and the edges of the upper sheet to be turned down over the whole.

Fan. Furnish and erect one (1) six-foot (6′) double inlet steel plate fan with full housing, top horizontal discharge.

The fan is to be provided with pulley, shafting, belt, bearings, supports, large oil cups, oil drips, and all other needed fittings and attachments for its erection in the manner indicated on plans. The pulley to be of such size that in combination with the engine the fan shall be given a speed of two hundred (200) revolutions per minute with the engine running at two hundred and fifty (250) revolutions per minute.

Solid brick or concrete foundations are to be furnished for the support of the fan casing by the Contractor, who will do all excavating in connection with the same.

The fan and engine are to be erected complete for running by the manufacturers at the expense of the Contractor.

Main Heater. This is to be made up of seventy (70) sections of the School Pin Indirect Radiator, rated at fifteen (15) square feet per section. The sections are to be grouped, piped, and valved as shown on plan. Two (2) groups are to be piped and arranged with valves in supplies and returns so that they can be used singly or together, either for exhaust or live steam.

The sections are to be supported on four-inch (4″) I-beams resting on three six-inch (6″) cross-beams set in the brick walls at the sides of the fan chamber. The condensation from the live steam sections is to return to the boilers by gravity, while the return from the exhaust sections is to drain to the overflow from the blow-off tank through a trap, a connection being made for returning the condensation to the boilers when live steam is used.

Piping. The main supply and return pipes are to be of the sizes marked, and are to run as nearly as practicable in the directions indicated. They are to be carefully graded in such manner as to cause a concurrent flow of steam and water, and are to be supported with adjustable hangers.

Returns. These are to be run as indicated on plans, partly at the ceiling of the basement story, but mostly near the floor.

All overhead return pipes shall have a grade of one inch (1″) in ten feet (10′), and all sealed returns a grade of one inch (1″) in twenty feet (20′) toward the boilers. A one-inch (1″) drain connection is to be made between the main return near the boilers and the blow-off pipe; a similar connection is to be made with the return from the main heater.

Sleeves, Floor Plates, etc. Where risers or other pipes pass through floors or partitions, they are to be protected through the full depth of flooring, etc., by galvanized iron sleeves, one inch (1″) larger than the outside diameter of the pipes, and secured concentrically with regard to the pipes by nickel-plated floor plates.

Sleeves of wrought iron pipe of suitable length are to be furnished wherever the pipes pass through brick walls.

Heating Surface. This is to be of the quantities and character indicated on the plans, and is to be distributed as there shown.

All ceiling coils are to be of one inch (1″) pipe as indicated. They are to be securely supported on rolls and in a manner satisfactory to the Architect.

Foot-warmers are to be of the indirect pin, rated at ten (10) square feet per section, and are to be erected in stacks of the size marked on the plans.

Direct radiators are to be two-column, except in the entrances, where they are to be three-column. All are to be thirty-two inches (32″) in height and have a single pipe connection.

The secondary heaters for the eight (8) class rooms are to be made up of indirect pin radiators rated at ten (10) square feet per section.

The amount of surface for the different rooms shall be as follows:

Room No.	*No. of Sections.*
7	7
8	8
12	7
13	8
16	7
17	8
21	7
22	8

These heaters are to be supported at the bases of the flues in the position shown in detail on plans.

Valves. All valves in mains and branches are to be of the gate pattern suitable for low-pressure work. Radiator valves are to have wood wheels, rough body, and are to be nickel-plated. All valves on radiators having single pipe connection are to be either high-lift angle or offset.

Air Valves. Each direct and indirect radiator and coil is to be furnished with an automatic self-cleaning air valve. All are to be connected for drip through a three-eighths inch (⅜″) pipe and three-quarter inch (¾″) main, run to the boiler room sink. Each group of heaters in the main coil is to be provided with a self-cleaning air valve of large size, placed as shall be directed by the Architect, and brought out to an accessible point by means of pipe connections.

Steam Gauges. Furnish in addition to those already specified in the boiler room, a six-inch (6″) steam gauge for the exhaust sections of the main heater.

Thermometer. Furnish and place in the main air-way, where directed, an eight-inch (8″) dial thermometer of approved make.

Bronzing and Painting. All radiators, coils, and exposed overhead pipes and risers, drops and fittings outside the boiler, coal and fan rooms, are to be bronzed or painted as the Architect shall direct, and all exposed supply and

return pipes in the boiler, coal, and fan rooms, and all returns near the floor, and in ducts, of whatever size, are to be covered with two (2) coats of silica graphite paint.

The smoke connections are to be painted inside with two coats of the same paint. All other iron work, except galvanized iron, is to be covered with two coats of such protective paint as may be directed.

Covering. The smoke connections shall be covered with one inch (1″) of plastic asbestos, smooth finished and without cracks. All overhead steam piping in boiler and coal rooms are to be covered with Air Cell or Asbestos Magnesia sectional covering, all to be put on in the best possible manner. Fittings to be covered with moulded covering, smooth finished. Valves not to be covered. Paint all covering exposed in the corridors two (2) coats as directed.

Automatic Control. The Contractor executing these specifications is to furnish a complete pneumatic service for the automatic control of the steam supply and return to direct and indirect radiators, as may be directed by the Architect as follows. The secondary heaters for eight (8) class rooms and two (2) foot-warmers, and the direct radiators in office and teachers' rooms. All indirect heaters to have diaphragm valve on both supply and return. The foot-warmers will be controlled by two (2) thermostats, and class rooms and small rooms by one (1) each.

All air piping, water air compressor of latest pattern, tank, thermostats, valves, and all material and labor necessary to complete an efficient heat-regulating plant, are to be furnished and erected by the Contracting Company in a manner satisfactory to the Architect, and said Company will guarantee that the system will do its work properly and cost the Owners nothing to maintain such performance for one year from the date of its acceptance.

GALVANIZED AND OTHER IRON WORK.

General. Galvanized iron will be required to form the main air-ways and branches connecting the fan with the fresh air uptakes, as shown on the plans; all fresh air uptakes and all connections between the uptakes and the inlet registers; casings for secondary heaters, and all required stops around main heater and other heaters, foot-warmer casings, sleeves and collars; dampers; and deflectors. Vent flues will be of brick and furnished under another contract.

Fresh Air Inlet. The hinged windows will be provided under another contract, but the Contractor shall provide fastenings for the same, also heavy chains and large full guarded pulleys for operating the windows from the fan room floor. If found necessary the sashes shall be weighted as directed by the Architect.

Main Air Duct. The main overhead air-way and all branches connecting with the uptakes are to be made of galvanized iron complete, with tight joints, and are to be securely hung from the ceiling. They are to be made smooth on the inside, and of the dimensions given on plans. They are to be firmly and neatly supported in their several positions, and are to make tight connection with the other work to which they are attached.

Air Inlets to Rooms. The bottom of all air inlets is not to be less than seven feet (7′), nor more than eight and one-half feet (8½′) above the floor. The inlets to all class rooms are to be provided with diffusers suited to their respective positions. Floor registers, where shown, shall be of heavy cast iron, black japanned and without valves. Wire grilles satisfactory to the Architect are to be placed in all wall inlets for fresh air, and are to be of the sizes shown on plans.

Vent Outlets. The vent outlets from rooms shall be furnished with wire grilles similar to those in the inlets. The Contractor shall provide them with gossamer check valves, backed with galvanized wire grating of one-inch (1″) mesh.

Dampers. Large and easily operated pan dampers are to be placed in the two (2) main vent flues which discharge through the roof, and are to be furnished with ready and approved means for operating them from the basement, and securing them in any desired position. These dampers are to turn on roller bearings of approved design. Deflecting dampers are also to be placed in the main air ducts and branches where shown on basement plan. They are to be provided with approved holding devices for adjustment.

Foot-warmer and Secondary Heater Casings. The foot-warmers and secondary heaters will be enclosed in casings of No. 24 galvanized iron neatly constructed in a manner to be easily removable for access to the heaters. Place a slide door in the bottom of each casing.

Toilet Room Vents. The main basement toilet rooms are to be vented through a brick uptake, surrounding the boiler flue as shown. Connection is to be made between the uptake and the closed space back of fixtures as shown on basement plans.

Diffusers. For diffusers, use nothing lighter than No. 22 iron, hemming the edges of the vertical plates, and wiring the edges of the upper and lower plates. They are to be painted or otherwise finished as the Architect shall direct.

Deflectors. Adjustable deflectors are to be placed in the main air-way where judged necessary by the Architect, or shown on plans. These are to be rigid and are to have approved means for adjustment.

Gauge of Iron to be Used (unless otherwise specified). Pipes having a cross-sectional area of less than 120 square inches to be of No. 26 gauge; more than 120 and less than 300, of No. 24; more than 300 and less than 450, of No. 23; more than 450 and less than 750, of No. 22; more than 750 and less than 1500, of No. 20; and more than 1500 square inches, of No. 18.

Cutting and Repairing. All cutting for steam and air pipes through walls, floors, or partitions, other than that shown on the original plans, and not included in the building contract, will be done at the expense of the Heating Contractor, and in a manner satisfactory to the Architect.

Blowing Out and Testing. The whole system of pipes and radiators is to be blown out through a temporary two-inch (2″) connection before returning any condensation to the boiler, and is to be made clear of all debris to the satisfaction of the Engineer. All steam piping is to be tested and made tight at a pressure of thirty (30) pounds per square inch. Fuel for testing will be furnished by the Owners, but all labor incident thereto is to be furnished by the Heating Contractor.

The Los Angeles Trust and Savings Bank, Los Angeles, Cal.

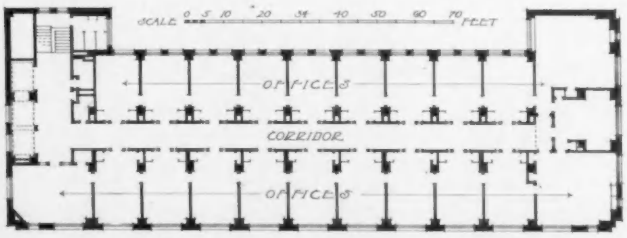
PARKINSON & BERGSTROM, ARCHITECTS.

IN the Los Angeles Trust and Savings Bank Building, the architects have freely handled their problem of exterior design without regard to the material of which the building was to be built. In their interpretation of the architectural requirements for the housing of a great fiduciary institution with superimposed office structure, they have felt no limit in architectural form and proportion, through thought of restriction in the medium of expression.

This is indeed the triumph of a material which has been regarded by many as capable of use only in connection with some other so-called constructive medium; for here we find a great commercial structure in its freedom of composition and detail calling for a solution of all of the problems of exterior design and construction from base course at the grade line to the coping of the parapet above the entablature, in white matt enamel architectural terra cotta. The architects have designed, with perfect freedom as to form, a building which they specify in architectural terra cotta, acknowledging through this expression the fact that they are emancipated from any restriction in the use of this material.

The lower portion of the building is monumental in character, of the Corinthian order, clearly indicating the semi-public purpose of the institution which it houses; while the third story forms an interesting pedestal to the well proportioned shaft. The shaft of the building is textured with horizontal bands in low projections at each story, while additional interest is given to the service mass by the panels, modeled in low relief, occurring in the spandrel sections beneath the openings.

DETAIL OF UPPER STORIES.



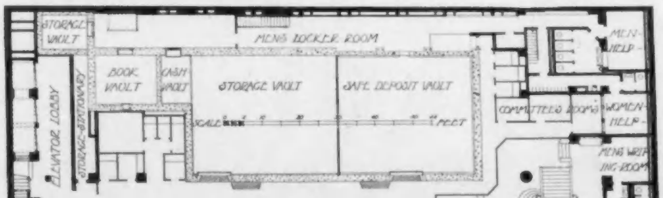
TYPICAL PLAN, FOURTH TO TENTH FLOOR.

The upper two stories naturally compose the entablature; the cornice carried on colossal but well proportioned caryatids, with the ornamental panels between the windows, form an enriched frieze, well studied for scale in its detail for both height and with relation to the cornice above.

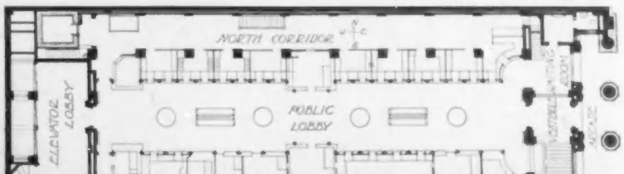
The end piers of the building are unusually strong and well balanced to the mass, a great relief in these days of undue sacrifice to light area. Yet this important requirement is amply provided for through the openings in the piers, which, however, in no sense detract from the solidity of the buttress from the fact that they are absolutely plain and raised sufficiently above the story demarcations and in no way affect the mass of the pier. The moulded forms throughout are simple and in excellent scale, while the ornament and modeling is carefully studied and executed with a fine regard to the surrounding elements and masses. Particularly good and architectural in feeling are the lions' heads which form the punctuations on the corona of the cornice at the second story.

In this building, simple, dignified, well proportioned and balanced, thoroughly interesting in detail, we find one of the best and most sane solutions of the office-building problem.

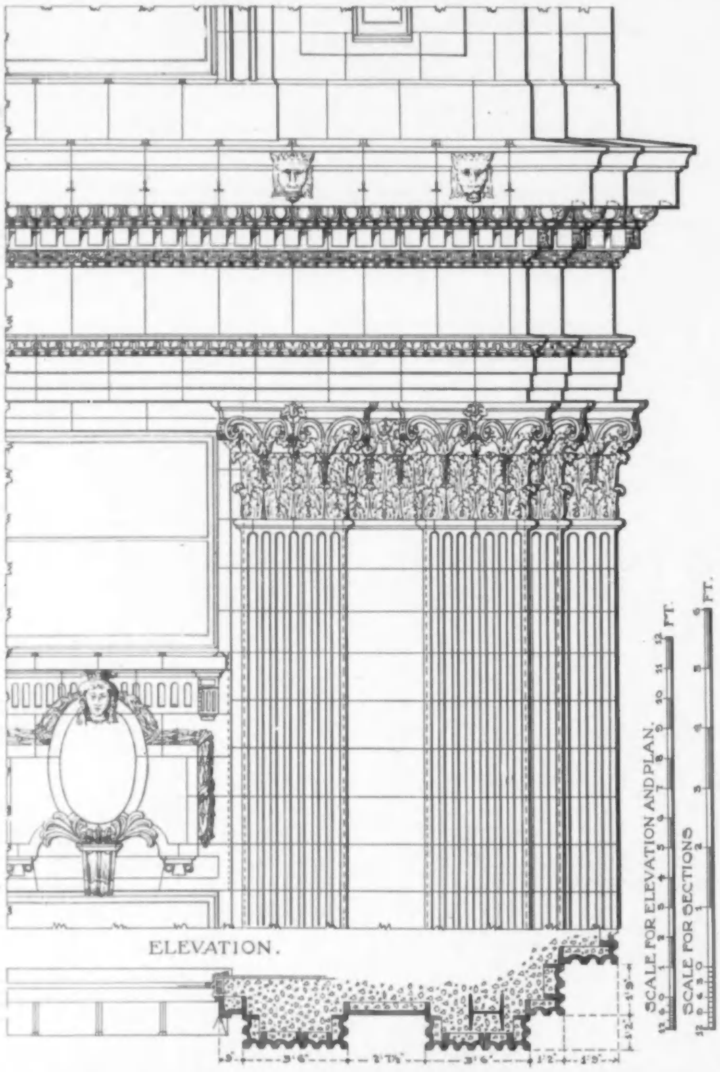
The jointing of the plain ashlar facing of the main piers is entirely easy and restful, the blocks ranging from one and three-quarters to twice their height in length, and being practically true in form.

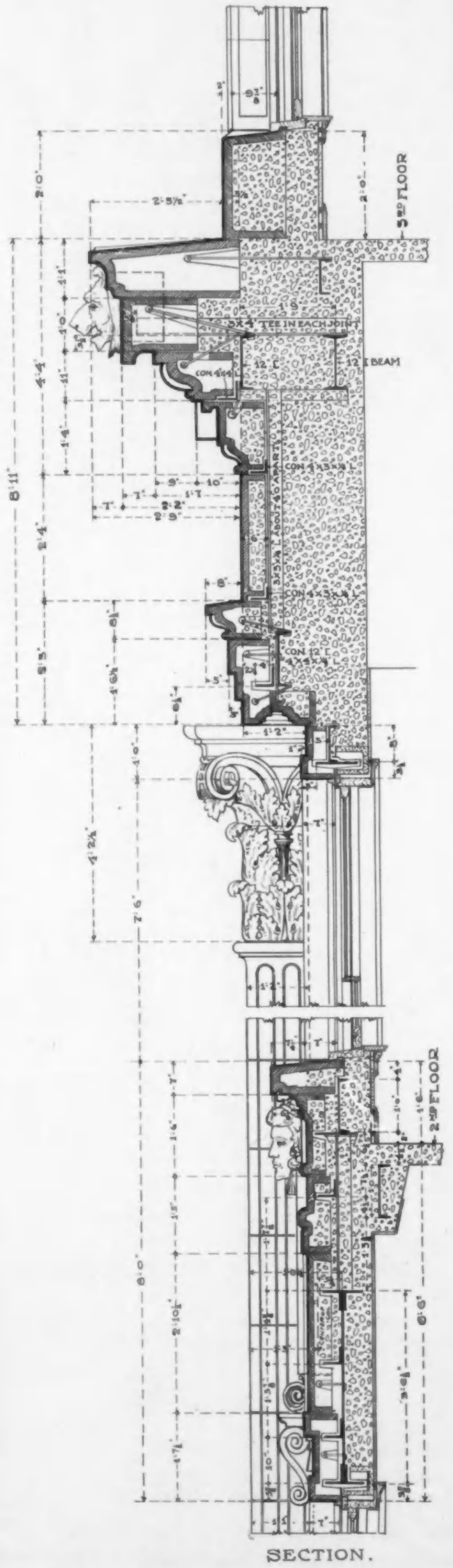


BASEMENT PLAN.



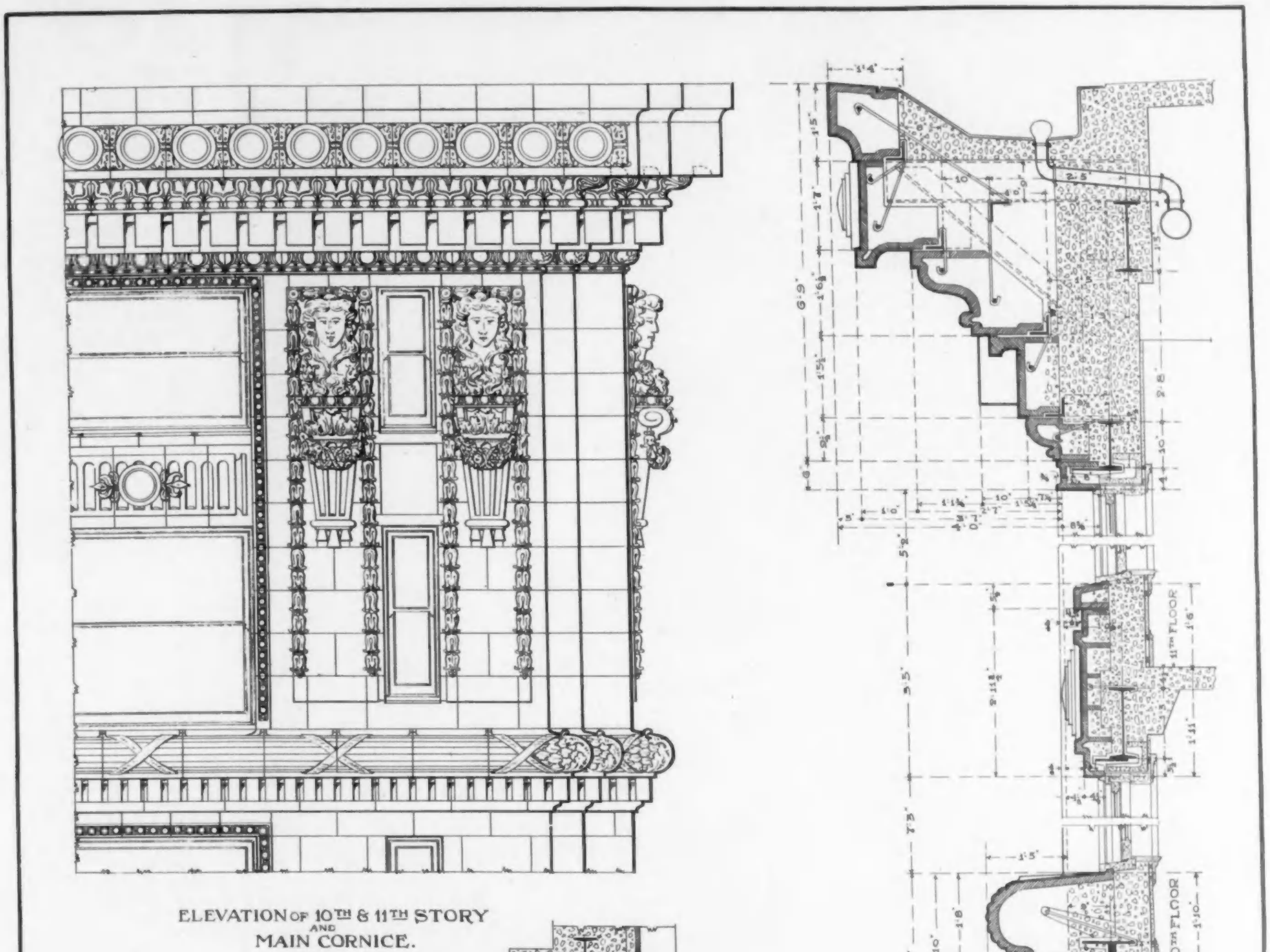
FIRST FLOOR PLAN.





Terra Cotta Details. Parkinson & Bergstrom, Architects.

LOS ANGELES TRUST AND SAVINGS BANK, LOS ANGELES, CAL.



Terra Cotta Details. Parkinson & Bergstrom, Architects.

LOS ANGELES TRUST AND SAVINGS BANK, LOS ANGELES, CAL.

Such anchors, ties, straps, and hangers as were necessary for the proper and safe securing of the material to the structure were accurately located and developed on the structural steel drawings, and shown with proper descriptions as to size and weight on architects' large scale working details.

A few technical points of construction and jointing, of more than common interest, are worthy of note in this building. In all of the work of the lower stories the material was made full in size, allowing for the rubbing of the joints, which insured close joint work. This has proven effective in the plain work of the second-story cornice, and peculiarly so in the great fluted columns and pilasters of the main story.

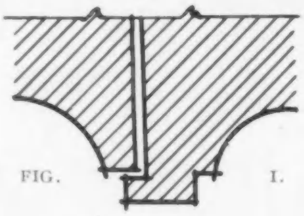


FIG. I.

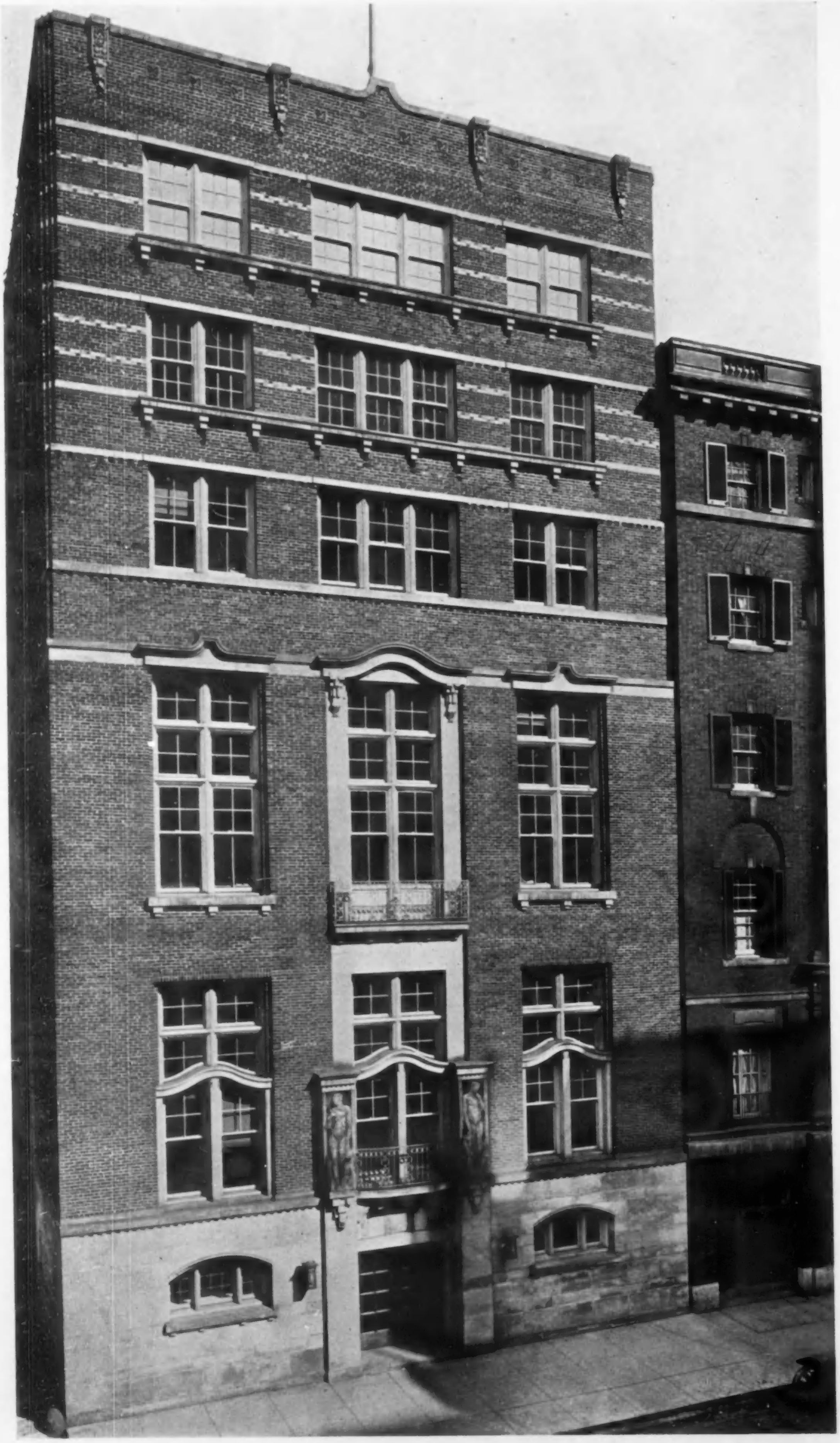
On the arris between the flutes a secondary member has been introduced, enabling a back joint at the line of this secondary member, as illustrated by Fig. I. By rubbing this joint with an emery wheel, the pieces join so closely as to be almost hidden, giving to the columns with drums the effect of single pieces. Ashlar between pilasters is run in behind the return of the pilasters, partially obscuring the joints. Wherever the plain ashlar abuts moulded forms the ashlar is rebated behind such mouldings. In the capitals and ornamental panels the joints are lost in the contours of the modeling.

Wherever practical, the main anchor of the more heavily projecting courses is set high in the piece and drawn down to the supporting girder, giving greater leverage and carrying power. A framework attached to the structural steel supports the pediments over windows at the fourth story, while anchors and ties still further secure the units to the structure.

The ceilings to vestibules to both bank and office building are in terra cotta, hung from girder and cross beam; the ceiling slab carrying over the beam covering and thus hiding the joint.

It is to be regretted that space will not permit of a detailed illustration of the smaller vestibule ceiling, which in the form of a cove reaches a moulding forming the border to an oval panel in single piece, which as a key forces the entire ceiling into solid construction. As an example of architectural and technical excellence, the building well warrants the thought bestowed upon it by architects and manufacturer, and demonstrates again the fitness of architectural terra cotta for buildings of this type.

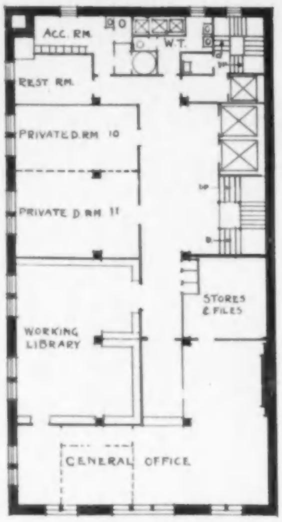
DETAIL AT THIRD STORY.



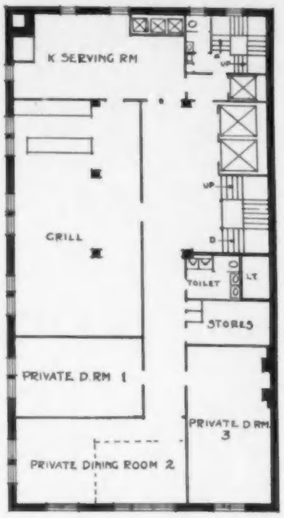
CITY CLUB,
CHICAGO, ILL.

POND & POND,
ARCHITECTS.

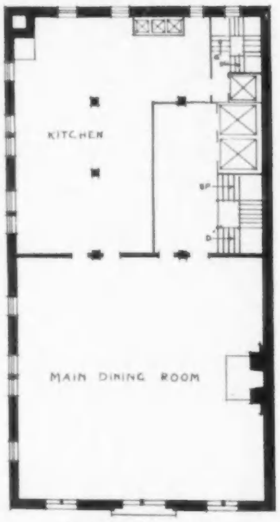
FIREPLACE IN MAIN DINING ROOM.



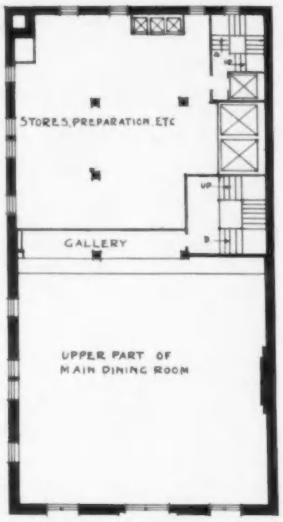
FOURTH FLOOR PLAN.



FIFTH FLOOR PLAN.



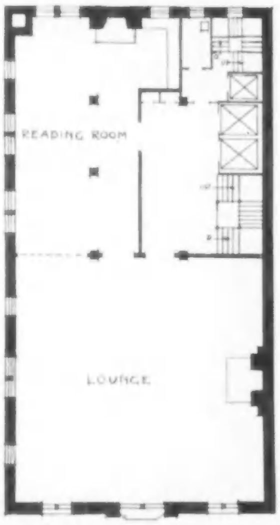
THIRD FLOOR PLAN.



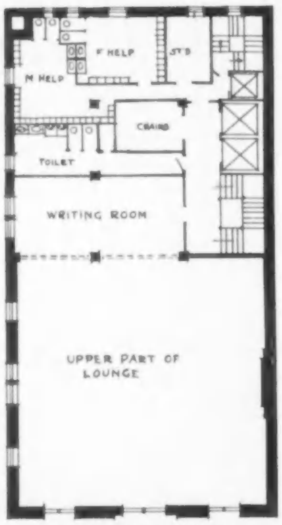
THIRD FLOOR MEZZANINE

CITY CLUB, CHICAGO, ILL.

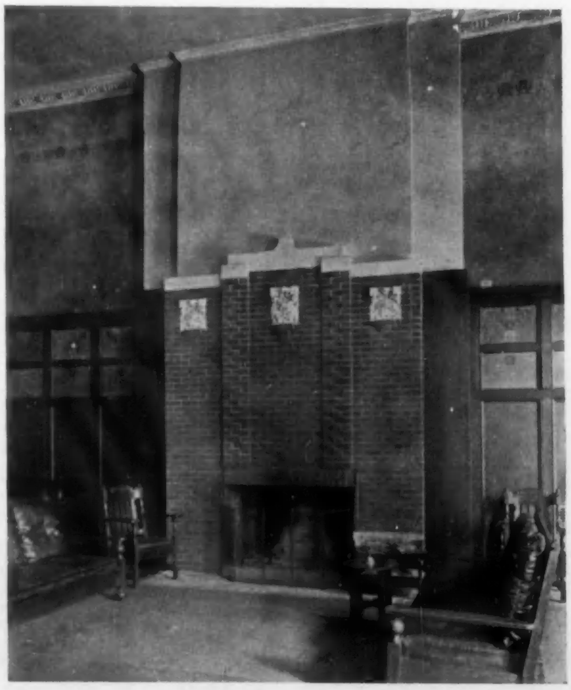
POND & POND, ARCHITECTS.



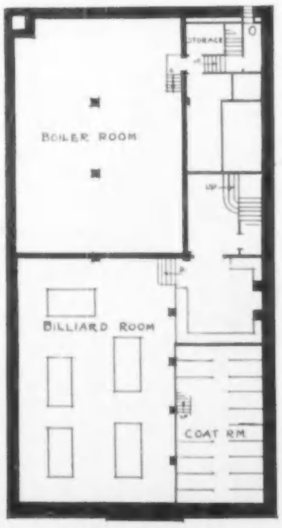
SECOND FLOOR PLAN.



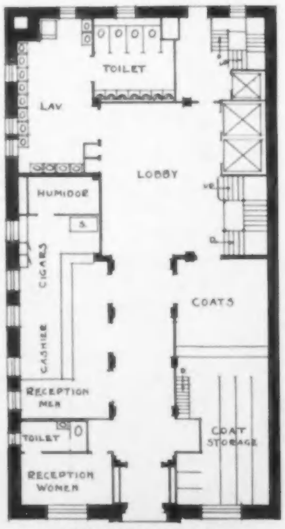
SECOND FLOOR MEZZANINE.



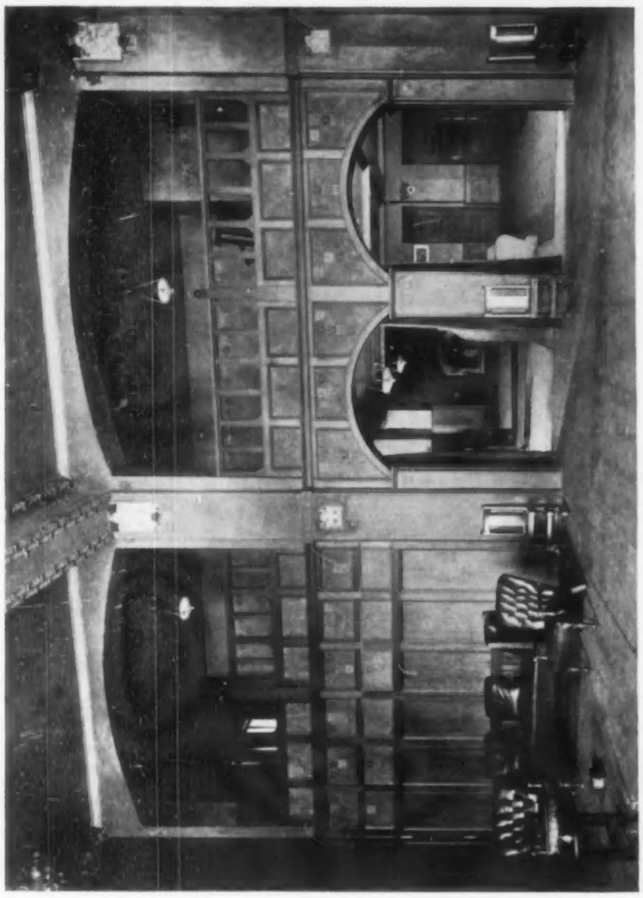
FIREPLACE IN LOUNGE.

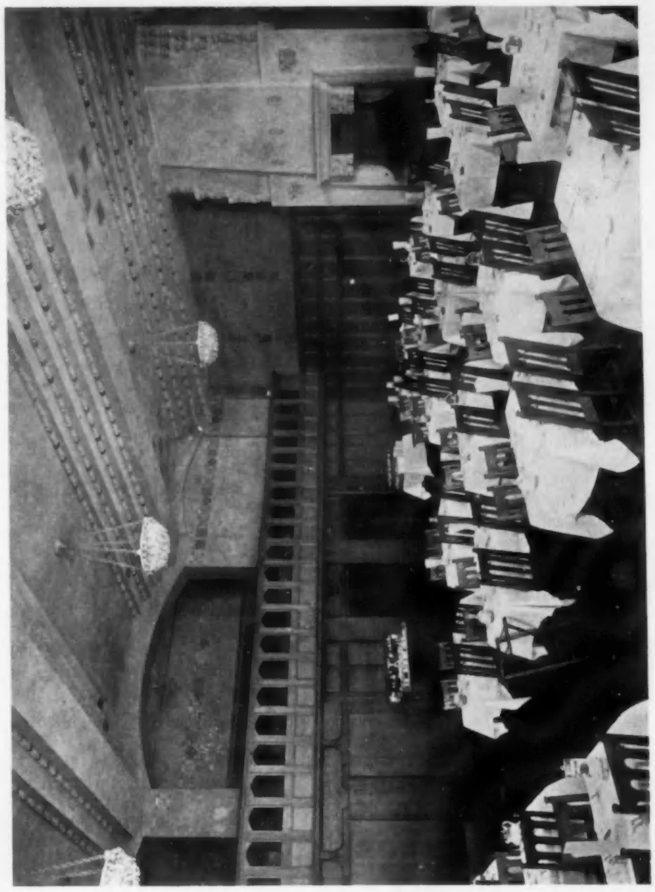


BASEMENT FLOOR.

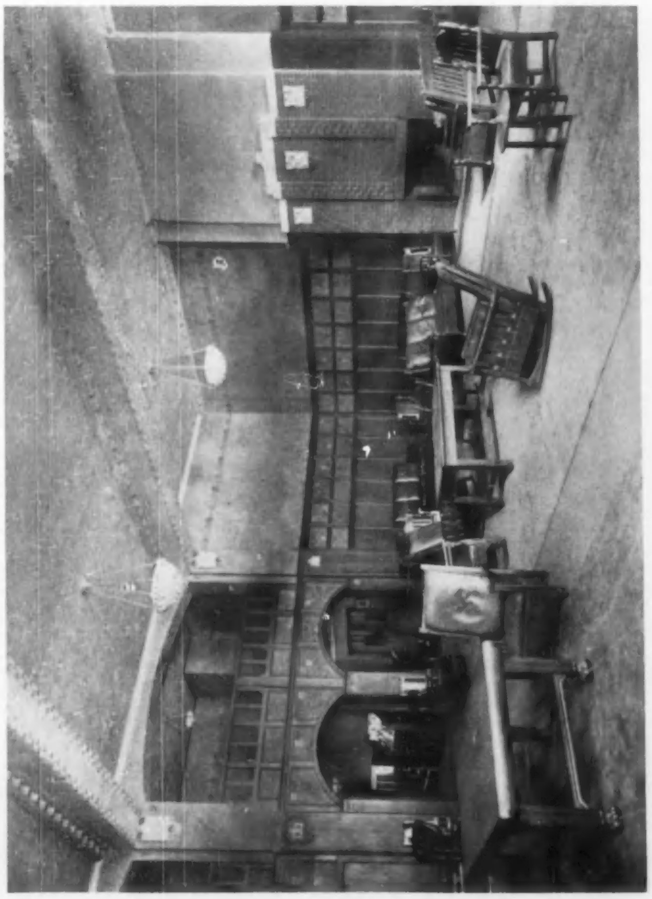


FIRST FLOOR PLAN.



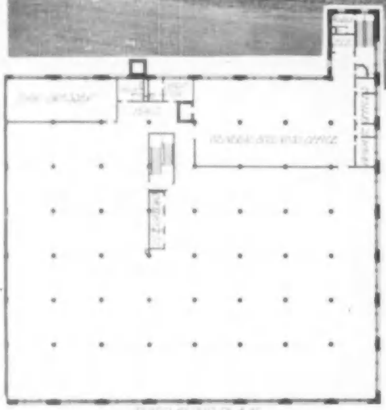


LOUNGE.
MAIN DINING ROOM.

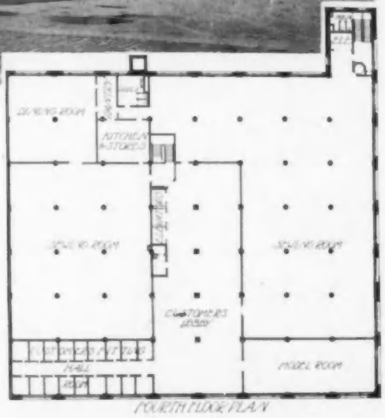


LOUNGE.
LOBBY CORRIDOR.

CITY CLUB, CHICAGO, ILL.
POND & POND, ARCHITECTS.



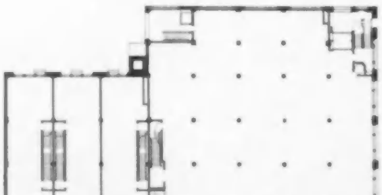
THIRD FLOOR PLAN



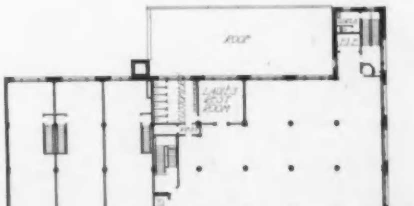
FOURTH FLOOR PLAN

HIGBEE STORE BUILDING,
CLEVELAND, OHIO.
ABRAM GARFIELD, ARCHITECT.

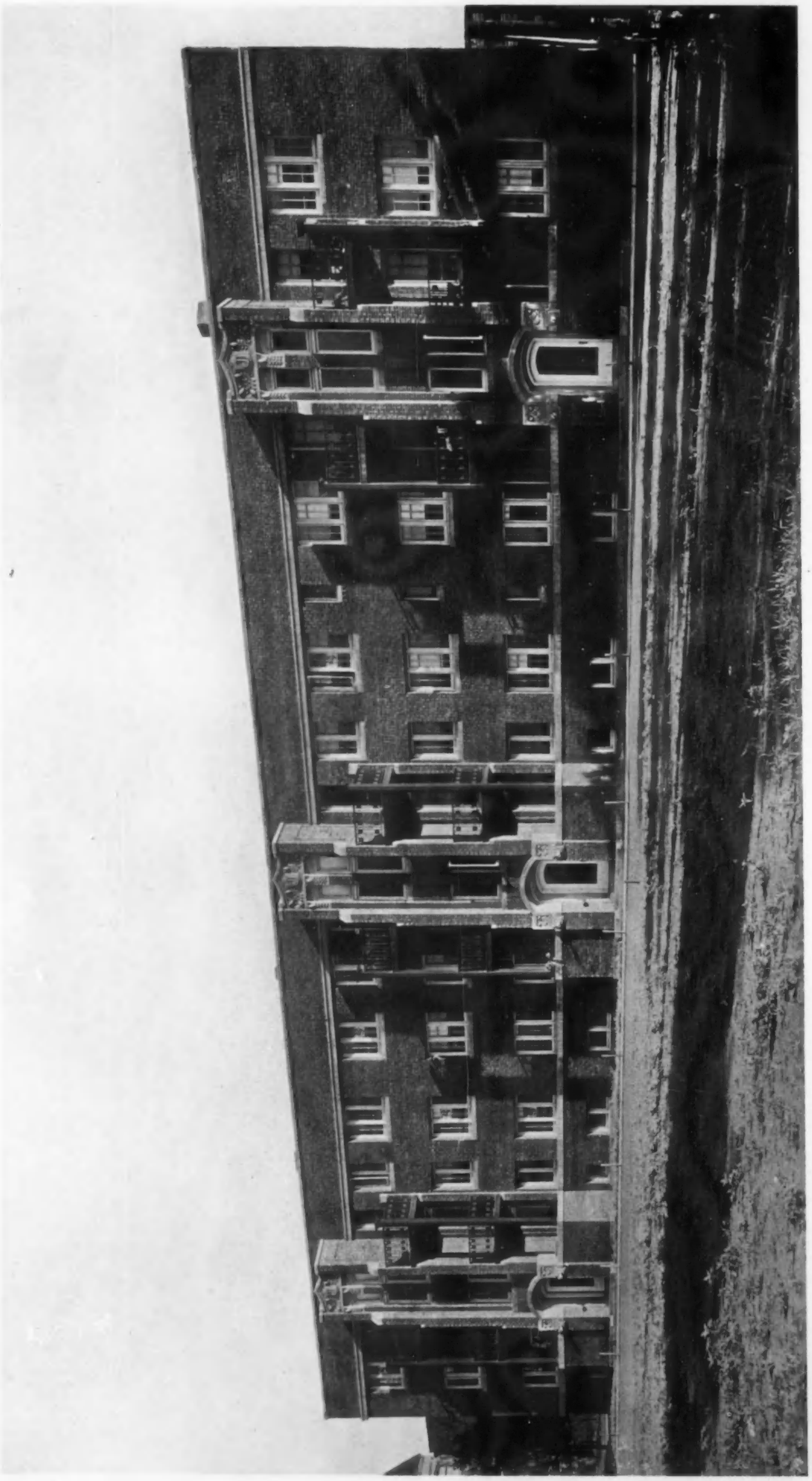
BASEMENT PLAN

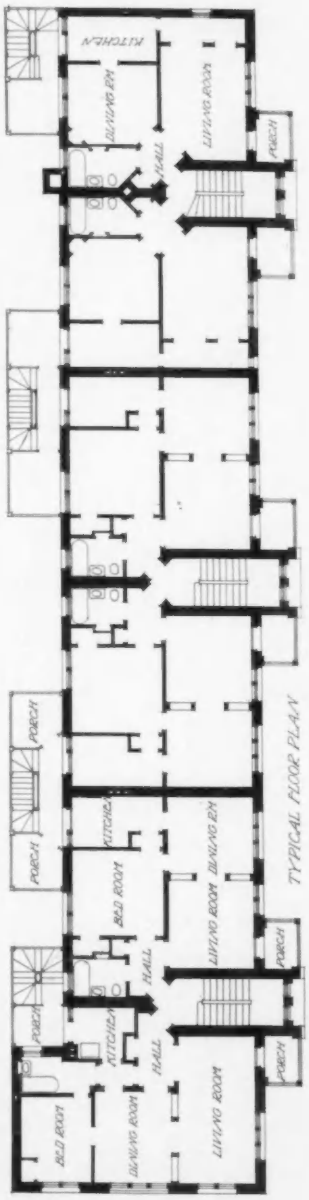


FIRST FLOOR PLAN



SECOND FLOOR PLAN





APARTMENT HOUSE,
CHICAGO,
ILL.

SPENCER & POWERS,
ARCHITECTS.

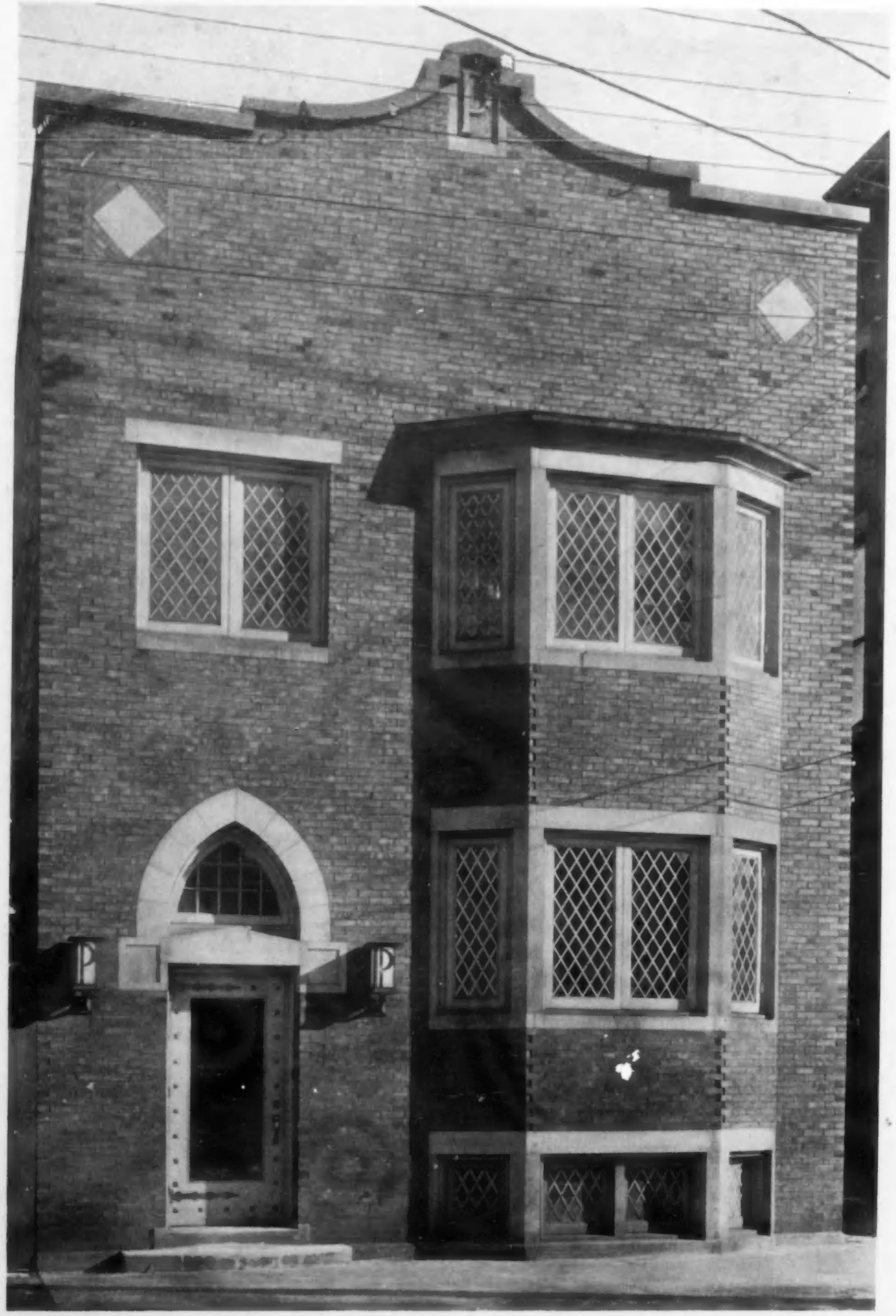
DETAIL OF ENTRANCE.

LIVING ROOM.

APARTMENT HOUSE, CHICAGO, ILL.

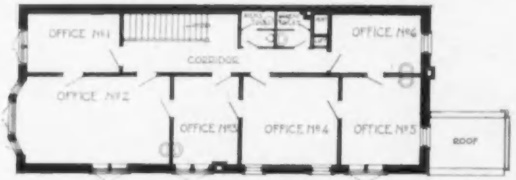
SPENCER & POWERS, ARCHITECTS.

VIEW FROM DINING ROOM.

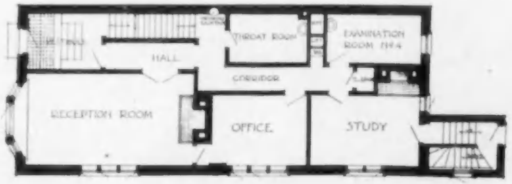


PHYSICIAN'S
OFFICE BUILDING,
GALESBURG, ILL.

SPENCER & POWERS,
ARCHITECTS.



SECOND FLOOR PLAN



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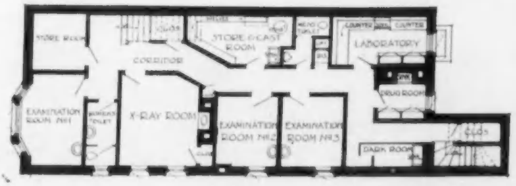
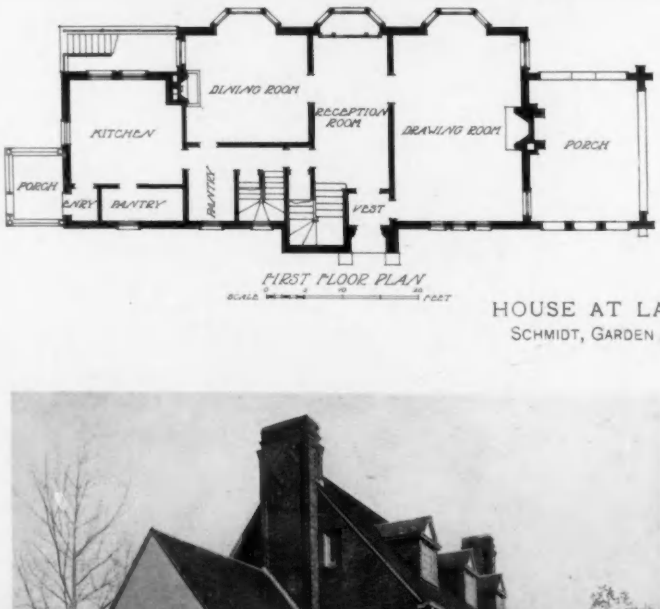


BASEMENT PLAN



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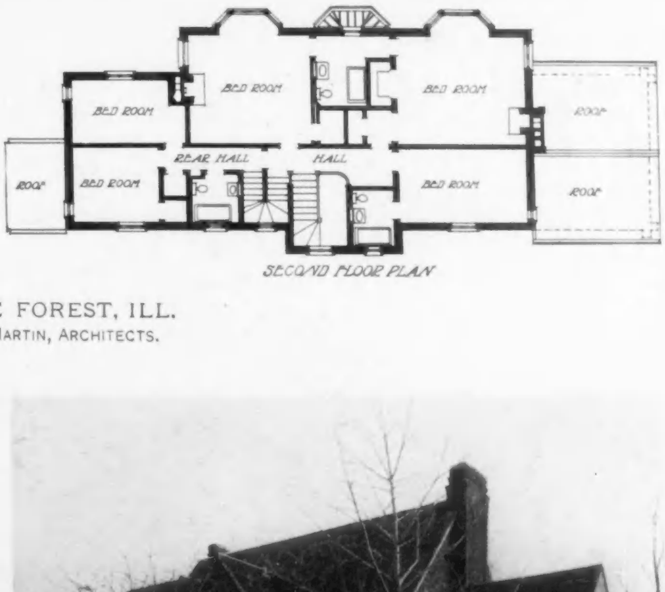


SECOND FLOOR PLAN

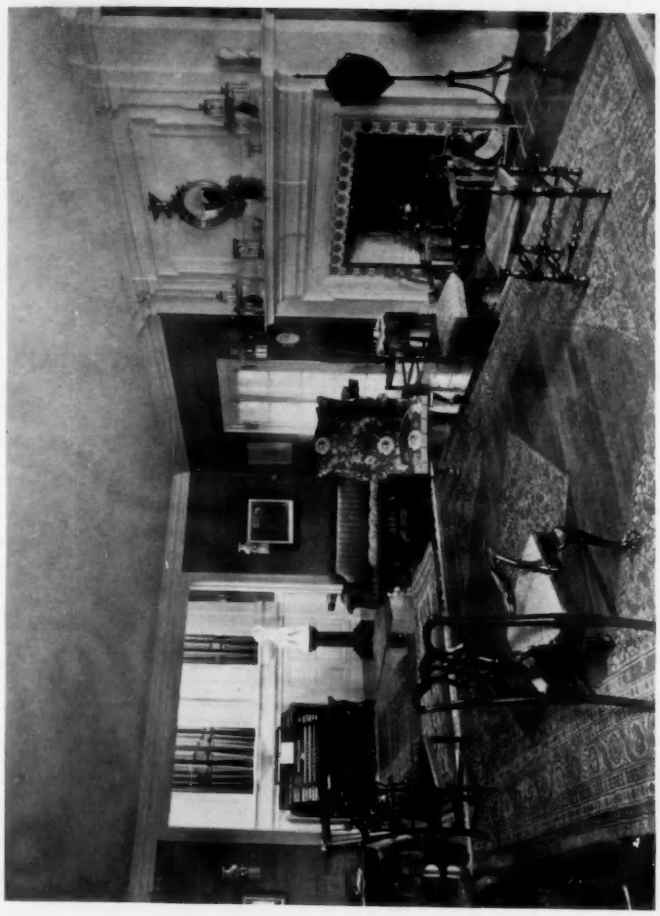
HOUSE AT LAKE FOREST, ILL.

SCHMIDT, GARDEN & MARTIN, ARCHITECTS.

HOUSE AT LAKE FOREST, ILL.
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

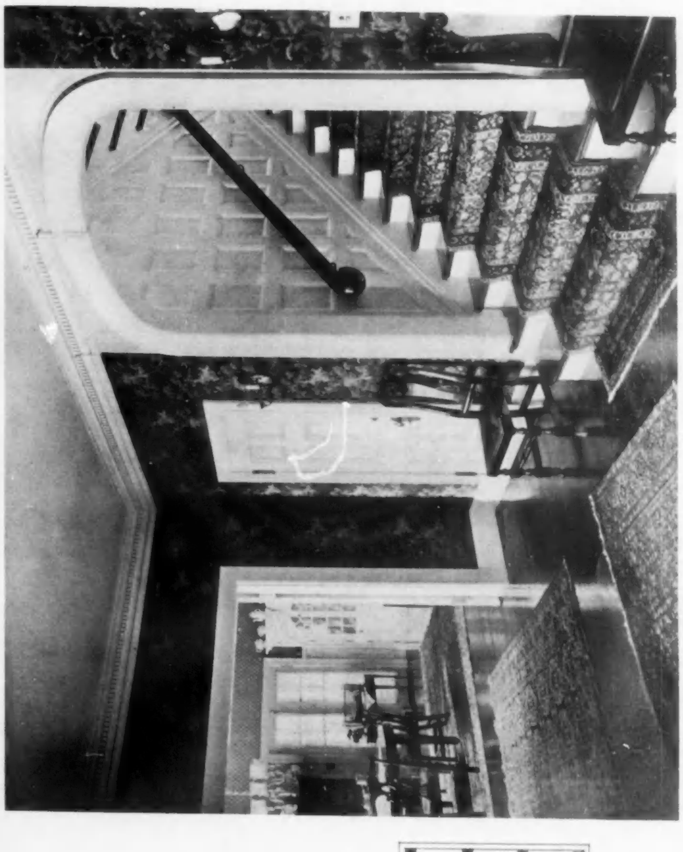
HOUSE AT LAKE FOREST, ILLINOIS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

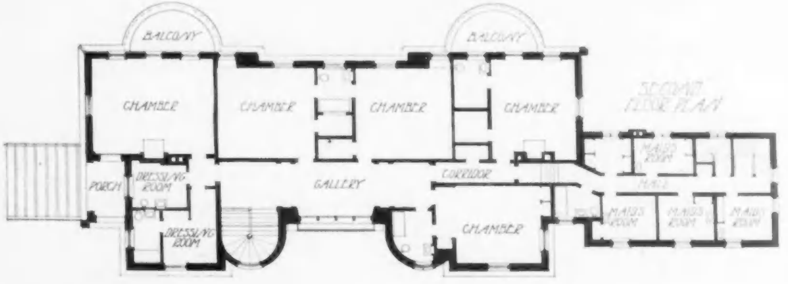


LIVING ROOM.

DINING ROOM.

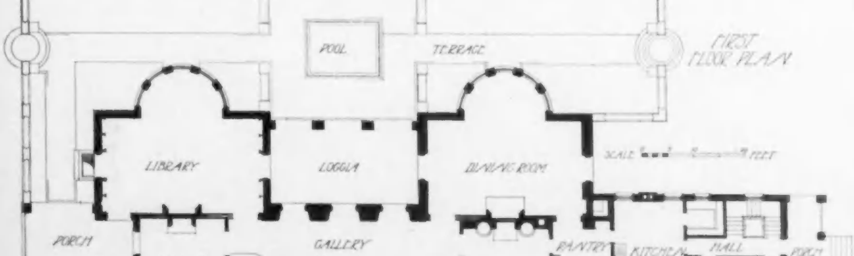


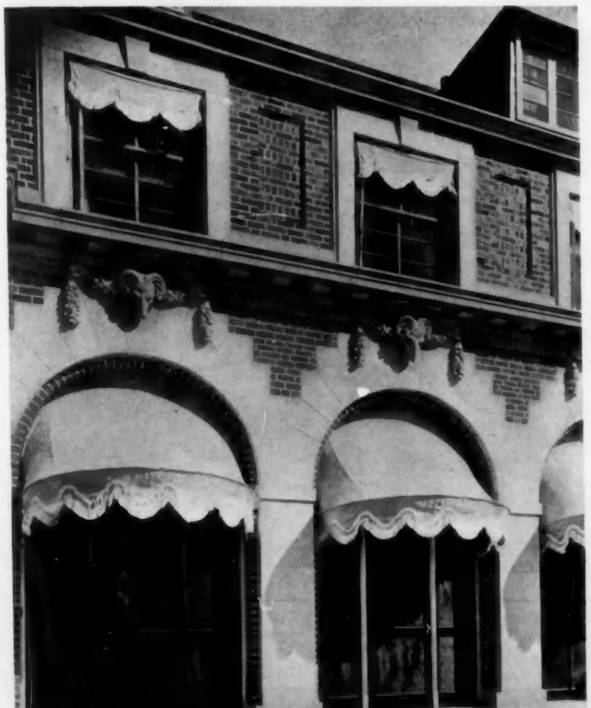
HALL.



HOUSE AT LAKE MINNETONKA, MINN.

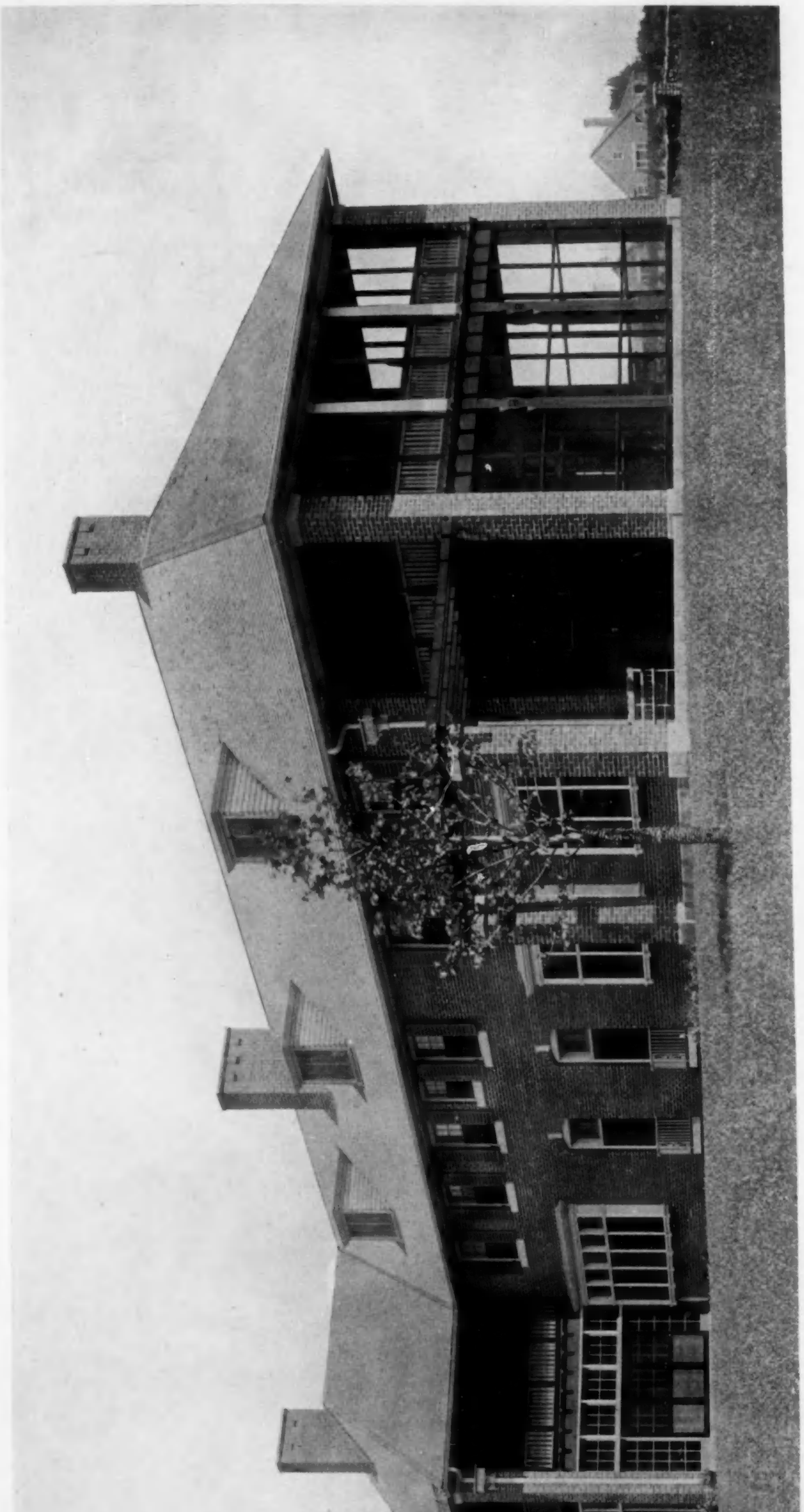
HOWARD VAN D. SHAW, ARCHITECT.





HOUSE AT LAKE MINNETONKA, MINN.
HOWARD VAN D. SHAW, ARCHITECT

HOUSE AT LAKE FOREST, ILL.
HOWARD VAN D. SHAW, ARCHITECT.



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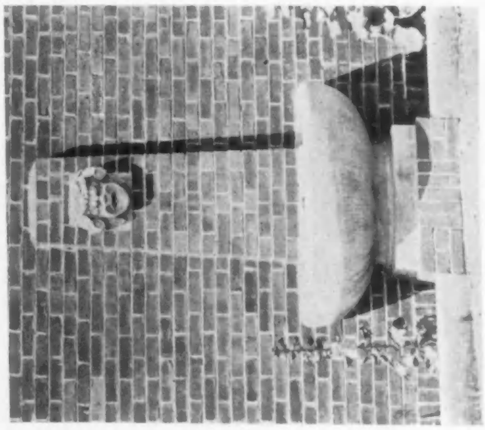
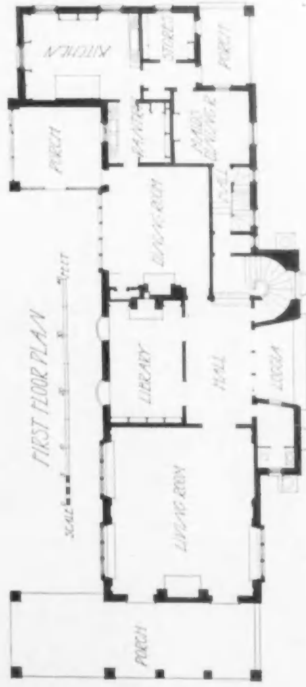
ARCHITECT.





HOUSE AT LAKE FOREST, ILL.

MAIN FAÇADE. BASILICA DI S. MARCO, VENICE. THE INTERIOR.

Distinguished Architecture as a Precedent.—III.

C. HOWARD WALKER.

THE change from the intellectual and formalized art of the Classic orders to the Byzantine art of the East and the Romanesque art of the North is an ethical change which is outside the scope of these articles. It is enough to notice that semi-civilization is responsible for both, and semi-civilization is usually spontaneous in its expression and but little trammeled with conventional observances. Both were derived from Roman antecedents, but the capabilities of workmanship with the Byzantine differed much from those of the northern invaders. The builder in the East maintained traditions of skill and worked comparatively undisturbed, while in the North churches arose upon the wreck of a civilization by the hands of workmen who were learning in the process. It is to be expected, therefore, that the great Byzantine monuments should always possess skilful workmanship and the beauty of efficient craftsmanship, while the first of the Romanesque buildings should be virile but crude. Two other influences appear — first that of race, second that of climate. The tendency of thought of the Oriental is for subtle, intricate expression, that of the Northman for incisive, clear demonstration. The climate of the East and South stimulates desire for color by the example of nature, that of the North makes strong color inharmonious and impertinent. The architectural student, therefore, while enamored with the mosaics and the lace-like carving of the Byzantine detail, finds that in northern conditions they become somewhat exotic, and demand occasions for unusual splendor to warrant their adoption. The glory of the Byzantine art has somewhat a taste of barbarism despite the delicate appreciation of Greek workmen. It blazed in metals and jewels, enamels and rich marbles, and formed a background for a people in multicolored costumes. But as an exponent of splendor in color and material, it is replete with inspiration — especially in its mosaics. The Byzantine of the Greeks in the city of Constantine was classic in its architecture and resembled Rome, but within two hundred

SIXTH CENTURY CATHEDRAL, ATHENS.

INTERIOR OF THE CAPELLA PALATINA, PALERMO.

to suggest for exterior work. On the interior of the building and in the detail of the carving there is much to observe. The walls are covered with great rectangular sheets of marble veneer — the grain of the marble reversed to make a pattern; around these are narrow borders of contrasting tone. The carved caps and panels partake of the Oriental quality of flat carving, in two planes, depending more on the silhouette of the ornament upon the ground than on the modulations of surface. The spiny acanthus is used everywhere, with the lobes of nearly equal size and with V cut surfaces, and the ornament covers the ground, the field appearing only in the interstices of triangular forms which in themselves make a pattern. The flowing lines and scrolls of the leaves deserve careful study. The ornament, while firmly held by its borders, has great freedom within those boundary lines. The barrel vaults and domes are covered with rich mosaics, which are of several types. First the mosaics with deep blue grounds such as are on the tomb of Gallia Placidia in Ravenna and in St. Sophia in Constantinople. These are of the sixth, seventh, and eighth centuries. The mosaics with pale sea-green grounds, like those in S. Apollinare in Classe and in S. Vitale at Ravenna, of the seventh century, and finally the gold ground mosaics of the Capella Palatina in Palermo, and St. Mark's in Venice, which appear after the ninth century. The mosaics are large in texture and simple and conventional in drawing, with a much larger proportion of field than ornament, therein being the

years the distinctively Byzantine work of Justinian had replaced to a considerable extent the classic type. A new religion usually prefers a new expression, and the precedent for the great churches was sought in the small Syrian Christian buildings rather than in the pagan temples. The structure was Roman vaulted and domed, and the pendentive appeared as a valuable addition to structural form. But the chief decoration was upon the interior of the buildings instead of upon the exterior as on the temples, and, with the exception of the low domes, Byzantine architecture has little new

MARBLE MOSAIC FLOOR.

reverse of the carving, and conform to the limitations of the material and have never been surpassed.

The Byzantine style is adaptable for interiors in which the walls are covered with marbles or mosaics or both, and therefore is frequently used in memorial chapels, crematories, oratories, etc., in cloistered courts, monumental staircase halls and the large halls of public buildings, such as libraries, railway stations, etc. It is formal and grandiose, and ill-fitted in most cases for the interiors of private buildings, though even in such buildings certain of its characteristics can be adopted, especially in baths which are of sufficient importance and have architectural treatment.

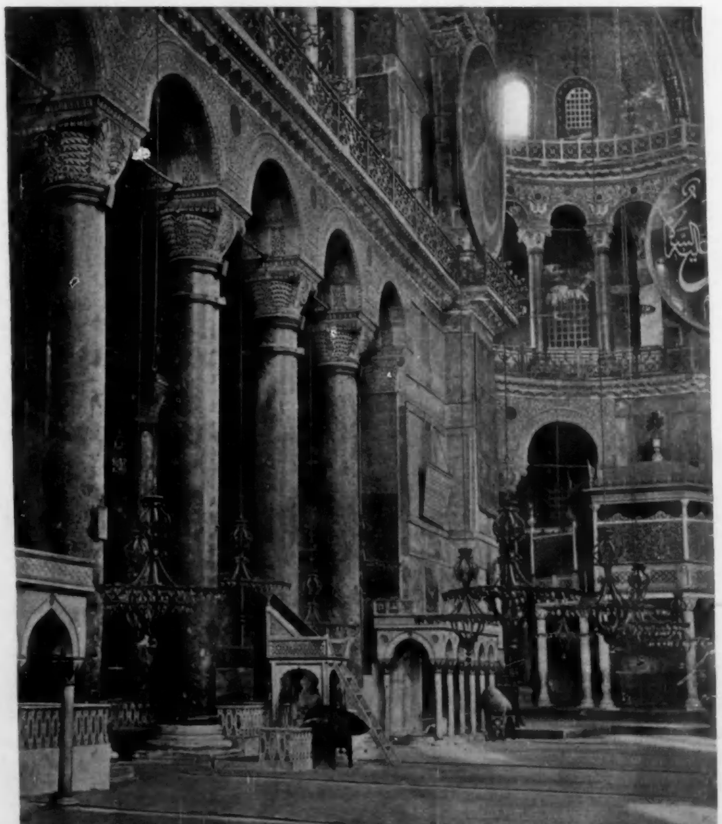
The application of Byzantine motives to marble wall surfaces can be made extremely interesting; for instance, the marbles may be selected for their grain and used in large panels around which borders of mosaic are placed in-

MOSAIC ORGAN GALLERY, RAVENNA.

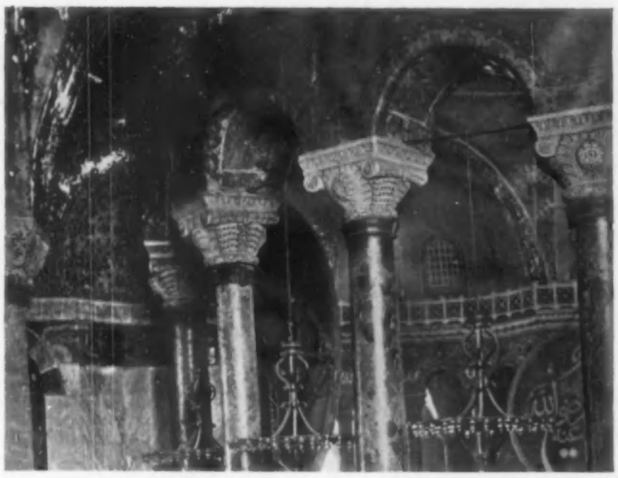
ST. SOPHIA, CONSTANTINOPLE.

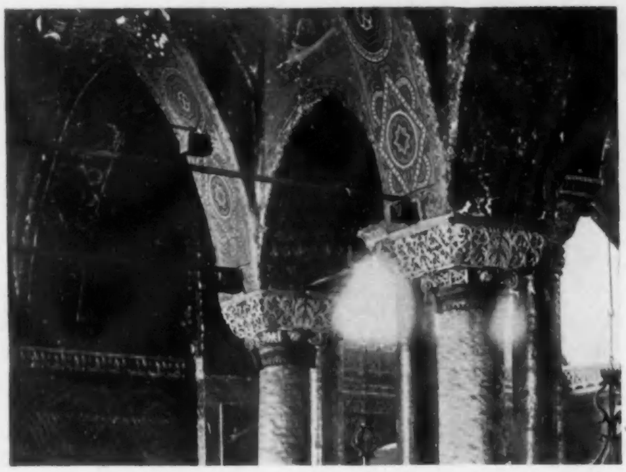
stead of mouldings, or, as in the walls of Monreale, rich vertical lines of mosaic may alternate with widths of marble. This work is especially adaptable to public rooms in which it is desired that few mouldings should occur. In the Cosmati work in Rome, contemporaneous with the Byzantine work, the flutes of columns were filled with geometric mosaics. The introduction of the mosaics in the marbles produces brilliant effect of color contrasted with fine stone work. Arched and domed forms covered with blue and gold and green mosaics create an impression of great splendor, which is consistent with theaters and sumptuous public halls.

The advantage of Byzantine work is that no studied orders of architecture are necessary in its use. It is essentially a decoration of plain surfaces, and can be fitted to any space. Its detail, like most Oriental detail, is in planes and in small scale, giving the effect of intricacy and elaborate design, while as a fact it is extremely simple in arrangement. For these reasons, any architectural work in which the structure by its conditions is irregular, but maintains simple surfaces, and in which it is desired that rich effect should be gained without the use of formal orders, can be treated admirably in the Byzantine style. Its range of color can be from white and silver and black, as in one of the chapels of Westminster Cathedral in London, through red, black, and gold to the deep-



INTERIOR OF ST. SOPHIA, CONSTANTINOPLE.





SOUTHERN GALLERY. INTERIOR DETAILS, ST. SOPHIA, CONSTANTINOPLE. NORTHWEST GALLERY.

est greens and blues, and its carved detail can be devoid of all but one simple moulding and yet enrich every variety of surface. The leaf which is most frequently used, with its V cut lobes, is so simple that it requires only moderate skill excepting in its arrangement. Pierced stone grills are especially fine when designed in the Byzantine manner.

In churches and chapels, and elsewhere, openings through which but little light is required, often require a more robust treatment than can be obtained by any system of muntins or by leaded glass. The insertion in these openings of perforated grills designed with the stems and leaves and patterns suggested by Byzantine work maintains the surfaces and color of the wall at the same time that it embellishes the opening. The same is true of heating and ventilating openings, in which brass or bronze grills would produce spots in the general design, while stone grills would harmonize with their surroundings. Byzantine capitals are compact and strong, but little of the material being cut away, and though quite as elaborate and rich as those of the Corinthian order, they seem capable of supporting greater weight. They are equally adaptable to columns, piers, and pilasters, and subject to great variety of design. The marble floors of Byzantine work have always been famous, and differ from the Roman mosaic floors in that they are not made up of small pieces of one size, but of pieces of various sizes, the foci being of large pieces of marble which are surrounded by geometric patterns and borders of smaller pieces. In Roman mosaics the designs are built up of small tesseræ of equal size, as are the Byzantine wall mosaics, but the Byzantine floor mosaics are built up of separate pieces of varying sizes, cut to geometric units and fitted together to form the pattern. The floor mosaics are of marble, the wall mosaics largely of glass.

CAPITAL IN S. VITALE, RAVENNA.

CAPITALS IN S. VITALE, RAVENNA.

Commemorative Monuments.—IV.

H. VAN BUREN MAGONIGLE.

WE begin the equestrian series with the rather tiresome figure of Napoleon bidding farewell to France, at Cherbourg. If there is one quality that should inform an equestrian statue it is spirited repose; and arrested action, the perpetuation of a momentary pose, grows very wearisome.

The same qualities are to be seen in the Jeanne d'Arc in the Place du Martire at Orleans, published in article No. II; it does not possess a tithe of the charm of the dismounted figure at the foot of the staircase of the Hotel de Ville; but at least it is so placed that the streets converge upon it. Compared with Fremiet's Joan, the Orleans equestrian is poor indeed; this superb monument stands in a little square, a sort of backwater in the stream of traffic along the Rue de Rivoli, surrounded by the quiet arcades of that street. One comes rather suddenly upon it, and always with pleasure. It has something of the same quality as the Colleoni in Venice, stated in feminine terms.

STATUE OF NAPOLEON, CHERBOURG, FRANCE.

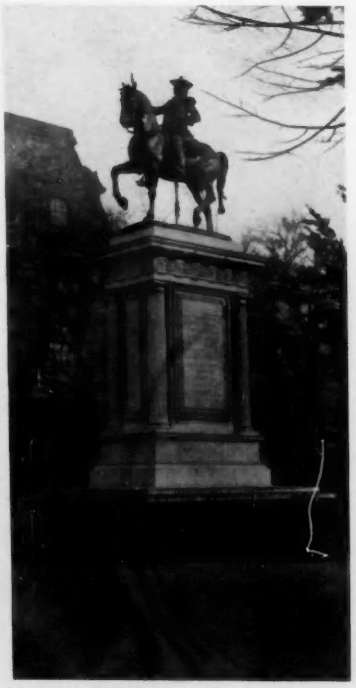
The Lafayette Monument in Paris, a gift of America to France, is the work of Paul Bartlett and Carrère and Hastings in collaboration; the pedestal of the Colleoni is of course the prototype of this, and it is interesting to compare it with the original.

The Washington Monument in Paris, on the axis of a street leading to the Trocadero, was also presented to France by the United States, and is the work of Daniel C. French collaborating with McKim, Mead & White.

The photograph of the statue of Washington, by Browne, in Union Square, New York, makes apparent the fact that it stands on the axis of Fourth Avenue, but this is by no means evident or obvious on the spot. It occupies a position corresponding to that of the statue of Lincoln, facing diagonally toward the park. Thus, some dim idea of symmetry and balance seems to have governed the highly intelligent persons who were responsible for its placing. The pedestal is particularly good — so simple as to attract but little attention, but on examination it is seen to be beautifully designed.

In the splendid square before the National Museum in Berlin is the elaborate monument to Frederick the Great; it carries out the principle touched on before — that the lines of the pedestal should build up in such manner that

WASHINGTON MONUMENT, PARIS.



LAFAYETTE MONUMENT, PARIS.

JEANNE D'ARC MONUMENT, PARIS.

the composition is a unit, although the groups around the pedestal nearly spoil it.

The famous statue of Henri IV on the Pont Neuf is interesting chiefly on the historical side, being one of the monuments of Paris that have suffered the vicissitudes of changing political conditions. It has been pulled down and put up again more than once.

Frederick MacMonnies and McKim, Mead & White produced the spirited Slocum Monument in Brooklyn; the recall of bronze in the pedestal helps to unite the pedestal and the statue.

One cannot claim much for the setting of Donatello's Gattamelata in the great square at Padua; it seems to just happen very much as things do around here; the pedestal is queer enough and the horse looks strange to American eyes accustomed to a finer bred type. But to carry a captain of the Renaissance it would seem that such an animal as this was needed; the statue is of historical interest as the first modern specimen of bronze casting of heroic size.

SLOCUM MONUMENT, BROOKLYN, N. Y.

St. Gaudens' Sherman in the Plaza in New York may fairly be classed, I think, as one of the great equestrian statues of the world. Just as the ponderous horses of the Gattamelata and the Colleoni moving slowly forward seem to express the leisurely progress of campaigns conducted by mercenaries, so, to me, this whole composition typifies the swift march from Atlanta to the sea. The sense of movement seems to be gained by expressing the rush of air against the garments rather than by any violent muscular action, and this gives a subtle quality of repose to the whole composition; it moves and yet it does not give one the feeling that it will move from the pedestal. The bronze is gilded as many of the antique statues were, and, harsh and glaring at first, it is growing mellow and dirty and beautiful. Here is a solution of the problem of bronze sculpture with a background of trees. The fine pedestal is of red granite, polished, with gilded bronze wreaths in low relief inlaid on the sides; the cornice has a restrained projection that

STATUE OF HENRI IV, PARIS.

STATUE OF WASHINGTON, NEW YORK CITY.

MONUMENT TO FREDERICK THE GREAT, BERLIN.

avoids the usual unpleasant shelf and deep shadow; it is by McKim, Mead & White.

I have reserved what is considered by most judges the finest equestrian statue in the world for the last of the equestrian series—the portrait of Bartolommeo Colleoni by Verrochio, the teacher of Leonardo da Vinci, in the little piazza beside the Church of SS. Giovanni e Paolo in Venice. Colleoni, like Gattamelata, was one of the great soldiers of fortune who captained the armies of Venice, and we may be sure that in this we have the man "in his habit as he lived"; it completely visualizes for us the ruthless warrior of the period. The pedestal was designed by another hand and is the prototype of the Lafayette pedestal in Paris. The bronze frieze is an important factor in the effect of the whole. This band, of the same color as the sculpture, in the shadow of the cornice, ties the two together perfectly. The scale of the architecture seems small, but upon measurement one is surprised at the size of the members; and the ornament recalls in its delicacy the beautiful decorative trappings of the horse.

MONUMENT TO CONDOTTIERE GATTAMELATA, PADUA.

THE COLLEONI MONUMENT, VENICE.

THE SHERMAN MONUMENT, NEW YORK CITY.

Scientific Management in the Architect's Office.

WILLIAM O. LUDLOW.

ONE morning, in the drafting room of a certain architect's office, the following conversation took place:

Member of Firm. — I want to look at the three-quarter scale drawing you made of the façade of that little brick church. Let me see, how many hours were you on this?

Draftsman. — Forty hours, sir.

Memb. of Firm. — Forty hours, and your salary is sixty-two and a half cents an hour; that makes $25, and adding overhead charges or the usual proportion of the general office expenses, makes this drawing cost $40.

Draftsman. — I suppose so, sir, I never thought of it in just that way before.

Memb. of Firm. — Now, just what is the purpose of this drawing?

Draftsman. — Why, to show the contractor how to build that façade and give us a basis for full size drawings.

Memb. of Firm. — This, then, is not an exhibition drawing to hang up on the wall or to publish in an architectural magazine?

Draftsman. — No, sir, but it's the kind I always make, and nearly all draftsmen make.

Memb. of Firm. — All right, now let's see just how much of this will be of actual use in the construction of the building, for you must remember that a drawing of this kind is an instrument of service — a means to an end — not an end.

I notice you have drawn out in pale ink about five hundred brick with their joints — fifty would have served to show the bond, and the vertical dimension line you have there gives the modulus of height. So you have wasted about ninety per cent of the time you took in drawing bricks.

Now I see on this rose window you have drawn in the ornament on the terra cotta architrave half way around. If you had fully drawn a quadrant, you would have shown the contractor all he wanted to build by and all you will want in full sizing. You wasted then fifty per cent of the time you spent on this.

On the eaves line you have drawn the ends of all the roofing titles; that gives the drawing a whole lot of interest and snap, but if you had indicated about three tiles and put on a label, "Spanish Tile Roofing," you would probably have deprived yourself of a whole lot of fun, but would have told the contractor all he needed to know and saved the firm about ninety per cent of your salary on "Spanish Tile."

Now, finally, another thing I notice is that this façade is symmetrical about a vertical axis, so that you might have drawn just one-half and lettered "This side repeats." Of course it wouldn't have looked like a real building then, but you would have given the contractor all the information he wanted and saved about forty per cent on the total time consumed.

So this drawing, costing the firm $40, might have been made at a cost of about $20. In other words, you have wasted $20 of the firm's money because it is much more interesting to make this kind of a drawing and because this is the way draftsmen customarily do it.

The Member of Firm went back into his private office and got to thinking over the wicked waste of time and money in the average architect's office, due simply to a lack of scientific management. His thoughts transcribed would have read something like this:

"No wonder the average architect complains of small returns from the practice of his profession; no wonder he sometimes gets less than his head salaried man."

"When a professional man of any sort employs men and runs an office, he has a business proposition on his hands which must be conducted on approved business methods — no waste — *esprit de corps* — every man suited to his job — maximum efficiency of men and instruments of service — and all those things which go to make up what we popularly call scientific management, which is nothing more or less than the substitution of brains for tradition and *laissez-faire*."

The Member of Firm invited the entire force to lunch with him that day and asked them if they wouldn't all like to be members of the firm. As there seemed to be no violent objection he started out by telling them what scientific management had done for "commercial business" and how, and stated that he was firmly convinced that the same principles applied to "professional business" would increase the profits at least twenty-five per cent.

Further, he observed that as the success of such methods in an architect's office would depend largely on the application of them by the draftsmen themselves, he proposed to make them all members of the firm in the sharing of the additional profits so far as they were produced by their own industry and foresight in carrying out these principles. For instance, the usual cost of the production of the work by an architect's organization is one-half of the gross income, and whatever amount this cost falls below the mark can legitimately be considered additional profits, and the firm can well afford to share part of these additional profits with those whose added effort and industry make such profits possible.

The Member of Firm then retailed the conversation of the morning, pointing out that the greatest expense of an architect's office is the draftsmen's salaries, and how every man connected with the production of drawings could by the application of "gray matter" eliminate largely the unconscionable waste of useless drafting. He further suggested that the method of scientific management applied to drafting was just this: Size up your problem; just exactly what information is this drawing to give; what is the clearest and most concise way to give it, and then don't put on a single line that doesn't subserve these purposes.

This provoked a general discussion of other ways and means of economy, such as: the leaving to the office boy everything an office boy can do, instead of having a $30 draftsman spending his time in getting out drawings, sharpening lead pencils, bordering plans and the like; the most efficient card catalogue system for drawings and plates, and the latest and most approved filing system for documents, papers, etc., for the first cost of the best system, is made up a hundred times over by the saving often of the most valuable time in the office.

"But right here," said Member of Firm, "I want

to point out one danger. This office is not a plan factory and we are never going to make it such. Our calling we believe is of a little higher grade than commercial business; our success depends on the imagination, the inspiration, the personality and the ethical and spiritual qualities which we put into our work. We are not trading in material things — we are creating — and I beg of you not to think for a moment that I advocate machine-like processes; quite the contrary; the whole thought of this scheme is *more* individuality, *more* personal initiative, *more* brain. These things cultivate the imagination, the spirit, while mere tradition and *laissez-faire* deaden our best instincts."

The Member of Firm didn't say, but he thought and believed, that the motive power behind his scheme was the awakening of incentive, first by the prospect of reward and second by an *esprit de corps* and loyalty which surely follows the partnership feeling, for with the instilling of these feelings disappear largely many of the abuses in an architect's office, which rules and regulations will not cure. Loafing, curtailing of hours of work, lack of interest would now cut two ways.

The system was installed and worked, and why shouldn't it, for it is nothing more nor less than applying the well recognized principle of co-operation and profit-sharing as an incentive, and then by laying down the principles whereby the incentive can be turned to practical account.

Often when I look over architects' drawings or see their time-honored and cumbrous pigeon-hole document boxes, their inadequate and therefore costly systems of recording and filing drawings, I am struck with the wanton waste of the architects' precious substance, and am almost forced to believe that next to our professional friends, the lawyers, we are, like the traditional shoemaker, most prone to provide good shoes for our customers, but let our own children go barefoot.

Editorial Comment and Miscellany.

PLATE ILLUSTRATIONS — DESCRIPTION.

City Club, Chicago. Plates 57–59. The chief motive in the general design of this building was to give expression to the relationship existing between the City Club and the modern social and civic aims. The building, 50 x 95 feet, has a height of 93 feet above the sidewalk and 12 feet below reaching to the basement floor. The construction is fireproof throughout, the outer walls being of solid masonry on pile foundations, and the floor arches of hollow tile. The floor in the lobby is of quarry tile, in all halls and corridors of composition, in the toilet rooms of marble and ceramic tile, and in the principal rooms of cork or maple. The trim and finish is quartered sawed oak up to and including the main dining room, while all above is of select birch. The cost of the building, ready for decoration, was approximately $145,000.

COURTYARD OF HOUSE AT CLEVELAND, OHIO.
Roofs of Imperial Spanish Red Tile made by Ludowici-Celadon Company.
Abram Garfield, Architect.

FILTRATION OF SWIMMING POOLS.

THE result of several years' investigation by German experts on the filtration of water for swimming pools has recently been edited by Drs. Kister and Fromme of Hamburg, Germany. The tests, which were very extensive and complete, included waters purified by aeration and filtration as well as water not artificially purified. Chemical and bacteriological analyses were taken at regular intervals from tanks varying from 2.4 to 10 feet deep of 20,000 cubic feet capacity, and 7 to 9 feet deep holding 10,000 cubic feet. 1,050 cubic feet of fresh water was poured into the smallest tank every twelve hours from pipes above the water level, while the larger tank was supplied by a pipe at the low point of the bath and flowed one-half hour twice a day, forcing a continuous overflow of the surface water. The experiments revealed the fact that the germs do not increase in proportion to the number of bathers but have a tendency to sudden increases and decreases. Chemically there was little change except in the oxygen consumed and the increase of ammonia.

The purification plant employed consisted of eight coke beds, 7 inches thick, over which water was sprayed, and two sand filters 20 and 40 inches thick with an area of 42 square feet. The water after being filtered through the plant was forced back to the tank by a pulsometer and centrifugal pumps. At the end of twenty-one days the

THE FIRE COMPANIES BUILDING, 80 MAIDEN LANE, NEW YORK CITY.
The modeled ornament of the entablature is in white against a background of green, executed by the Atlantic Terra Cotta Company. The arrow indicates a novel use of bronze terra cotta for panels between window courses. D. H. Burnham & Co., Architects.

water was transparent to a depth of 10 feet and had a better color than originally.

The summary of the experiments showed that a 40-inch sand filter is sufficient in itself for all purposes, and also that tank water, if filtered continuously, can be kept hygienically clean for three weeks.

AMERICA'S GREAT FIRE WASTE.

IN view of the great fire losses during the past few months, Roger W. Babson, the statistician of Wellesley Hills, Mass., prepared for the *New York Times* the following data on America's enormous fire waste:

"Twelve months of fire losses like those in January of the current year would affect the American people, together with the insurance companies doing business in this country, in a manner not pleasant to contemplate. The percentage of loss to premiums received that month ranged from 80 to 118, compared with a normal in recent years of less than 50 per cent.

For the United States and Canada the estimated loss by fire that month was $35,653,450, and to multiply that by twelve would give results quite appalling — over $427,000,000 against an average of $234,000,000 for 1911 and 1910.

Assume that the total losses for the United States in 1912 shall approximate the amount indicated by the January figures and there is no parallel to be found in any past year except in 1906, the year of the earthquake and fire in California, when the footing was $518,611,800.

It will be noticed that only $68,000,000 of the loss in the United States for the year specified was on buildings of brick, stone, and other slow-burning construction material, whereas the loss on frame buildings was almost exactly twice as much or $146,000,000."

Mr. Babson was particularly emphatic in driving home the personal side of this great problem of fire waste. "Remember that the average loss to-day in the United States is $2.82 per capita for protection and $2.54 per capita for fire, or a total of $5.36 per capita or $26.80 per family per year. Remember that these figures for Europe are only $0.57 and $0.48 respectively, with a total of only $1.05 per capita or $5.25 per family. Assuming that with European fireproof construction our buildings would be 10 per cent more expensive, and this would make rents 5 per cent higher (which is very liberal), fireproof construction would still enable a money saving of over $10 per year for each American family, besides saving thousands of lives, with untold misfortune, suffering, and inconvenience."

DETAIL FOR AN APARTMENT BUILDING.
New York Architectural Terra Cotta Company, Makers.
Mulliken & Moeller, Architects.

APARTMENT HOTEL IN BERLIN.

GERMANY'S first apartment hotel conducted on American lines has been erected recently in Berlin. The plans provide for single rooms and suites for bachelors and families. The features of importance include a sanatorium and elaborate set of baths. The building is limited to five stories and covers an area equal to a full American city block.

DISCOVERIES IN MESOPOTAMIA.

THE German expedition under the direction of Baron Oppenheim has made some important discoveries at Tel Halef in Mesopotamia. In addition to many examples of sculpture there has been unearthed the foundations of a royal palace. The fragments of the walls contribute a series of some seven hundred stone reliefs with sculptured groups and single figures in a perfect state

of preservation. The elaborately carved cornerstones of the palace towers together with the gateway, guarded by two colossal figures of animals, have also been excavated.

TERRA COTTA FOR THE LOS ANGELES TRUST AND SAVINGS BANK BUILDING.

THE architectural terra cotta for the Los Angeles Trust and Savings Bank Building, Parkinson & Bergstrom, architects, described in this issue, was furnished by Gladding, McBean & Company, San Francisco.

FIREPLACE EXECUTED BY THE ROOKWOOD POTTERY COMPANY.

IN GENERAL.

In a limited competition held in Washington recently for the "All Souls Unitarian Church and the Edward Everett Hale Memorial Parish House," Wood, Donn & Deming's design was selected.

The Architectural Quarterly of Harvard University is the title of the new publication which will be published under the direction of the School of Architecture at Harvard. The first number contains articles and illustrations of unusual merit, and all the material is splendidly presented. The subscription price is $1.50 per year.

A. A. Ritcher, architect, announces the removal of his office to Reading, Pa.

Spencer & Powers, architects, announce the removal of their office to the Otis Building, 10 South La Salle street, Chicago.

George S. Mills, George V. Rhines, Lawrence S. Bellman and Charles M. Nordhoff, architects, announce that they have formed a partnership under the firm name of Mills, Rhines, Bellman & Nordhoff with offices in the Ohio Building, Toledo, Ohio.

DETAIL FOR ADOLPHUS HOTEL, DALLAS, TEXAS.
Winkle Terra Cotta Company, Makers.

HOUSE AT BIRMINGHAM, ALA.
Built of Golden Full Range Tapestry Brick, manufactured by Fiske & Company, Inc. W. C. Weston, Architect.

The Rotch Traveling Scholarship for this year has been awarded to Charles Cameron Clark, a special student at the Massachusetts Institute of Technology. The second prize for students in architectural drawing was awarded to Ralph J. Batchelder, who won first prize in THE BRICKBUILDER'S competition for a bungalow.

The Third Annual Exhibition of the Indiana Chapter, A. I. A., was held at the Art Institute, Indianapolis, from May 10th to 31st. The exhibit will be transferred to South Bend, Indiana, for a period of two weeks.

DETAIL FOR THEATER AND OFFICE BUILDING.
South Amboy Terra Cotta Company, Makers.
Thomas W. Lamb, Architect.

Leenhouts and Guthrie, architects, announce the removal of their offices to 424 Jefferson street, Milwaukee.

The entire façade of the Apartment House, 116 East 58th street, J. E. R. Carpenter, architect, illustrated in THE BRICKBUILDER for April, was in white matt and polychrome terra cotta furnished by the Atlantic Terra Cotta Company. The Ashlar blocks of the first two stories are delicately modeled in low relief; the entrance and its attendant features, second-story belt courses and third-story balcony, are boldly modeled and treated with old gold, blue, and green.

DETAIL EXECUTED BY O. W. KETCHAM TERRA COTTA WORKS.

Carter, Black & Ayres, New York, will supply 800,000 Harvard brick for the new Bellevue Hospital Buildings, New York City, McKim, Mead & White, architects; plain and moulded Harvard brick for the Noah Porter Memorial Gateway, Yale University, Howells & Stokes, architects; 300,000 Harvard and 300,000 white enameled brick for the new German Hospital, New York, I. E. Ditmars, architect, and Harvard brick for seventeen new Fire Department Houses, New York City, Hoppin & Koen, architects.

Oswald C. Hering and Douglass Fitch, architects, announce the removal of their office to southwest corner Madison avenue and Thirty-first street, New York.

Sayre & Fisher Company furnished the brick for the house at South Orange, N. J., Grosvenor Atterbury, architect, which was illustrated in THE BRICKBUILDER for April.

The architectural terra cotta for the Higbee Store Building, Cleveland, Ohio, illustrated in this issue, was furnished by the Atlantic Terra Cotta Company.

DETAIL BY WM. LESLIE WELTON, ARCHITECT. The Northwestern Terra Cotta Company, Makers.

The Bradford Pressed Brick Company will supply over 500,000 "Bradford Reds" brick for the new Mount St. Mary's Hospital to be erected at Niagara Falls, N. Y., William P. Ginther, architect.

The Atlantic Terra Cotta Company will supply the architectural terra cotta for the following new buildings: Union Central Life Insurance Building—33 stories, almost entirely of terra cotta—Cass Gilbert, architect; Masonic Temple, Colon, Panama—white matt and polychrome—H. P. Knowles, architect; Fulton County Courthouse, Atlanta, Georgia, A. Ten Eyck Brown and Morgan & Dillon, associated, architects; Hotel El Paso Del Nort, El Paso, Texas, Trost & Trost and Mauran, Russell & Crowell, associated, architects; McGill Street Building, Montreal, Canada, R. E. Bostrom, architect; St. Columba Church, Philadelphia, Henry D. Dagit, architect.

W. Gibbons Uffendell and Nicholas H. Holmes, architects and engineers, have opened offices at 1328 McCormick Building, Chicago.

Charles M. Hart and Mott B. Schmidt announce the opening of an office for the practice of architecture at 43 Cedar street, New York City, under the firm name of Hart & Schmidt.

Falch & Knoll, architects, announce the opening of an office for the practice of architecture in the Hearst Building, San Francisco, Cal. Manufacturers' catalogues and samples desired.

Considerable interest is being manifested in Germany's newest and largest railway station, which has been in process of construction at Leipsic for the last nine years. The

DETAIL BY C. B. MEYERS, ARCHITECT.

The New Jersey Terra Cotta Company, Makers.

station takes rank as the biggest in Germany and represents a cost of $34,000,000. The Central Station at Frankfort has hitherto held that honor, while Hamburg's new Hauptbahnhof is also notable for its size.

The governor of Illinois has rendered a notable service to conservation by setting aside October 9 as Fire Prevention Day, the idea being to encourage efforts toward the prevention of fires and the lessening of waste from this cause, rather than the fighting of fire once it has started.

The significance of the date designated by the governor of Illinois is that it is the anniversary of the great Chicago fire, which started on that day just forty years ago, in 1871.

DETAIL FOR BROKEN PEDIMENT OVER MAIN ENTRANCE BY WALLIS & GOODWILLIE, ARCHITECTS.
Executed by the American Terra Cotta and Ceramic Company.

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BULLETIN

RECENT WORK, illustrated in this issue of THE BRICKBUILDER

House at Birmingham, Ala. .... Page 141
W. C. WESTON, Architect

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COMPETITION FOR A SMALL HOUSE.

To Be Built of Natco Hollow Tile. Cost not to Exceed $4,000.

FIRST PRIZE, $300. SECOND PRIZE, $200. THIRD PRIZE, $150. FOURTH PRIZE, $100. MENTIONS.

PROGRAM.

THE problem is a small, detached house, the walls and foundations of which are to be built of Natco Hollow Tile. Competitors may adopt the Bungalow type of house if they so desire, since the material will meet readily the requirements of such a design.

At least three bedrooms and ample basement room are to be provided for in the plan. Two bedrooms and bath are to be on the first floor. The third bedroom may be on first floor or in attic.

The location may be assumed in any town, small city, or suburb of a large city.

The cost of the house — exclusive of the land — shall not exceed $4,000. The method of heating, the plumbing, other fixtures, and finish, to be governed by the limit of cost.

The cost of the house must be figured at $.20 per cubic foot. Measurements of the house proper must be taken from the outside face of exterior walls and from the level of the basement floor to the average height of all roofs. Porches, verandas, and other additions are to be figured separately at one-fourth (25 per cent) of their total cubage. The cost of porches, etc., is to be included in the total cost of the house ($4,000).

On this basis of figuring — the number of cubic feet multiplied by the cost per cubic foot — *the jury will not consider any designs which exceed the limit of cost.*

All cubage and other dimensions will be carefully checked before the drawings are submitted to the jury.

On the drawing in a space measuring 6 inches by 5 inches — enclosed in rules — is to be given, at a size which will permit of two-thirds reduction, the cubage of the house multiplied by the cost per cubic foot, and the various items with costs which go to make up the total cost of the house.

The particular object of this Competition is to encourage the use of Natco Hollow Tile in small houses. The cost of this type of construction will be found to be in most parts of the country but little over that of first-class frame construction, and it is a fact that any mason of average ability can easily do the work.

The one marked tendency of the times is for better construction in houses. It is a subject which is being agitated by able writers in the magazines and the daily press. Insurance Companies, Boards of Trade, and other bodies interested in the public welfare are giving their support to the movement. It is believed that a Competition such as this will encourage a study of a type of construction which, although comparatively new, has, nevertheless, met all the demands put upon it with respect to æsthetic considerations, facility of construction, and cost.

CONSTRUCTION.

The following suggestions are offered as being practicable and admissible.

First. Outside walls may be of Natco Hollow Tile 8 inches thick (8 inches by 12 inches by 12 inches). Foundation walls, below grade, should not be less than 12 inches thick. The blocks being heavily scored on two sides, stucco may be used for an outside finish, and plaster applied direct to the block for interior finish.

Second. The walls may be built double, using in the outside wall a 4-inch hollow tile, and on the inside a 6-inch tile. The treatment of the face of such a wall, and the manner of bonding the outer and inner walls, are left to the designer.

The floors and roof need not be of fireproof construction.

DRAWING REQUIRED. (There is to be but one.)

On one sheet a pen and ink perspective, without wash or color, drawn at a scale of 4 feet to the inch. Plans of the first and second floors at a scale of 8 feet to the inch. A section showing construction of exterior wall with cornice. Heights of floors to be given on section. Enough detail sketches to fill out sheet. In connection with the plan of the first floor show as much of the arrangement of the lot in the immediate vicinity of the house as space will permit. The plans are to be blocked in solid. A graphic scale must accompany the plans. The character of the exterior finish must be clearly indicated on the perspective and detail.

The size of the sheet is to be exactly 26 inches by 20 inches. Plain black border lines are to be drawn on the sheet 1 inch from edges, giving a space inside the border lines 24 inches by 18 inches. The sheet is to be of white paper and is not to be mounted. Very thin paper or cardboard is prohibited.

The drawing is to be signed by a *nom de plume* or device, and accompanying same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

The drawing is to be delivered flat, or rolled (packaged so as to prevent creasing or crushing), at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., on or before June 25, 1912.

Drawings submitted in this Competition are at owners' risk from time they are sent until returned, although reasonable care will be exercised in their handling and keeping.

The designs will be judged by three or five members of the architectural profession representing different sections of the country.

First consideration will be given to the fitness of the design, in an æsthetic sense, to the material employed; second — the adaptability of the design, as shown by the details, to the practical constructive requirements of the material; third — excellence of plan.

Drawings which do not meet the requirements of the program will not be considered.

The prize drawings are to become the property of THE BRICKBUILDER and the right is reserved by THE BRICKBUILDER to publish or exhibit any or all of the others. The full name and address of the designer will be given in connection with each design published. Those who wish their drawings returned, except the prize drawings, may have them by enclosing in the sealed envelopes containing their names, ten cents in stamps.

Drawings submitted in this Competition will be returned direct from the office of THE BRICKBUILDER to the contestants.

For the design placed first there will be given a prize of $300.
For the design placed second a prize of $200.
For the design placed third a prize of $150.
For the design placed fourth a prize of $100.

This Competition is open to every one.

The prize and mention drawings will be published in THE BRICKBUILDER.

This Competition is conducted under the patronage of the National Fire Proofing Company.

On the preceding page will be found examples of construction which may be helpful to competitors.